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REASONS WHY YOU SHOULD SPECIFY

Continued from
October, 1933

"Prior to spawning, the livers are usually heavily loaded with fat, and the vitamin concentrations are correspondingly reduced. With the formation and ripening of the reproductive elements, there is both a transference of fat and vitamins from the liver to the gonads, which occurs to a much larger extent in the female than in the male, and a utilization of a proportion of the fat."

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to be continued

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VOL. XVII

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No. 2

CANCER*

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New York City

IT IS well, before starting on any discussion of cancer, to ask the question, "What is cancer?"

There is a very general theory, rather popular with the medical profession and universal with the laity, that cancer is a disease comparable to syphilis or tuberculosis, differing from them, however, in always proving fatal, calling for early diagnosis and immediate surgical excision, characterized by malignant, progressive growth, always essentially the same disease, and probably always of parasitic origin.

I believe this theory about cancer is erroneous. Furthermore, it is one of the most serious obstacles in the way of progress in the knowledge and control of the disease. Cancer is not a single disease comparable to syphilis or tuberculosis, but it is a great group of diseases, very varied in causation, course, indications for treatment and prognosis. It is the object of my remarks this morning to offer data in support of this view.

Many years ago a famous pathologist, Rudolf Virchow, was asked this very simple question which so many of us are so ready to answer today, "What is cancer?" He replied that no one, even under torture, could say exactly what cancer is. He had a rather philosophical view about it. Virchow divided all biological processes into three grand classes: (1) normal growth and functional changes, which we cover by the substantial sciences of anatomy, embryology and physiology; (2) inflammation, which is reaction to injury, and covers the infectious and degenerative diseases; (3) neoplasia. He thus placed

the group of tumors as of equal importance to the other two grand classes of biological processes, and indicated that the term "cancer" is not specific, referring to a single disease, but generic, referring to a whole group.

The progress of our knowledge in the last sixty years, since Virchow made that generalization, has supported his views.

The most important evidence on the question whether cancer is a specific, clinical, pathological entity, is its causation. When we look over the known causes of cancer, we find they are very varied.

I remember many years ago, in 1902, when Jensen presented his evidence that cancer in rats could be transplanted from one rat to the other, the old pathologists, or rather the young pathologists in those days, were indignant that one should break down the well known barrier, because up to that time no one had succeeded in transplanting cancer. We took refuge in the statement, "Well, we have transplanted cancer but no one has yet succeeded in producing cancer experimentally."

Today there are many ways of producing cancer experimentally. The first of these was unwittingly demonstrated by the pioneers in radiology who inadvertently exposed their hands to unfiltered soft rays, and in a very high proportion of cases they developed cancer, after a long period of peculiar precancerous changes. Here was a specific cause of a specific type of cancer, differing from every other type of cancer, unaccompanied by much overgrowth of cells, characterized especially by very sharp and definite, atypical qualities of the cells, with marked infiltrative tendency, and a uniformly fatal course.

*Citizens Aid Society Memorial Address presented at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 24, 1933.

There is no other type of cancer that has the same causation or the same clinical course.

Recently, radium has taken its place as an effective exciting factor in cancer, much the same as x-ray. In those dial painters who poisoned themselves by swallowing small amounts of radium in dial painting, we have cases of osteogenic sarcoma, where the radium lodged in the bones and, by the continuous action of small amounts of radium through the alpha rays, produced, in a high proportion of cases, osteogenic sarcoma. That has been produced experimentally in rabbits.

Recently we have come to recognize in tar and its derivatives a highly cancerigenic agent. The work of the London Cancer Hospital shows the high distillation products of tar, especially dibenzanthracene, produces cancer in animals in a comparatively short time, with a specific course. Dibenzanthracene is the most active cancerigenic agent we know, and it is entirely different in its action from the x-ray.

Throughout the list of simple chemicals, the alkalis and the acids are active in producing cancer. Recently there comes from Russia a report that Michaelofsky was able to produce cancer of the testis by injecting small amounts of chlorid of zinc into the testes of cocks. He was successful only during the breeding season. We have subjected this remarkable result to investigation in our laboratory. Only the other day we found several enormous teratomatous carcinomas of the testis in these cocks, some of them almost as large as the rest of the animal, undoubtedly due to the specific effect of chlorid of zinc, which has nothing to do, as far as we know, with x-ray and nothing to do with tar.

So there are a number of chemical agents, quite specific in themselves, which are capable of producing cancer in a high proportion of cases and in a comparatively short period.

When we look over the causation of the major forms of cancer, we find that the character of the irritant which we believe is active in most instances is very varied and, in most cases, still escapes us. We know about the effects of tobacco and bad teeth producing intraoral cancer, and there is a very good reason for believing that mammary cancer is very often the result of the irritation of lactic acid in stagnating milk.

There is little doubt that cancer of the stomach is largely the result of abuse of the organ, and

probably connected with infections of the mouth; so, also, esophageal cancer.

Sunlight produces a characteristic type of epidermoid carcinoma of the lip. We get quite a few of these cases in the South, especially among the fishermen. There is a distinct history of exposure to sharp sunlight. It is a very peculiar type of cancer.

I won't take any more time in reviewing the causes of the known forms of cancer but believe that the instances cited are sufficient to show that many different forms of cancer are the direct result, under proper predisposing conditions, no doubt, of specific irritants, and that on the point of causation we have every reason to believe these are specific diseases.

I have no doubt that observant and intelligent clinicians in the future (and I trust in the near future) will devote their attention to a more careful study of the conditions of origin of the different major forms of cancer and thus enlarge our knowledge in a practical direction in this field.

You may say, while the causes of cancer may be very varied, nevertheless the process, when once excited, is always the same. No doubt this statement will meet with considerable approval among experienced physicians and surgeons. It was very vigorously put up to me the other day by an experimental pathologist with whom I was pursuing this particular argument. He said, "Yes, the causes are all very different, but the process is always the same when once excited."

On investigation, this statement does not prove to be correct. What would you regard as the most fundamental property of the cancer process which would indicate whether or not it is always the same? Probably the metabolism of the cancer cells. How do they get their energy? What makes them grow? We don't know a great deal about this, but we have very intimate information on the chemical side through the contributions of Warburg. Warburg found that the cancer cell tested in vitro reveals a loss of oxidative capacity, a failure to respire, and a great increase of glycolytic properties. Low respiration and high glycolysis is a specific feature, and is the greatest contribution ever made by chemistry to the cancer problem.

However, it was very soon found that low respiration and high glycolysis are not limited to cancer tissues. They are found, also, in some

normal tissues, the retina, for instance. They are found in nearly all the granulomas, especially the active ones. It is more or less characteristic of certain embryonic tissues. It is highly characteristic of leukocytes. So that these features are not enjoyed exclusively by the cancer process.

Moreover, there are certain cancers that have been studied in the last two or three years, which do not show low respiration and high glycolysis. For instance, some of the lower animal tumors show normal respiration and low glycolysis.

I might pursue this subject a little further into other phases of the chemical and physical studies of cancer, but this is enough to show that the most fundamental knowledge that we have of the cancer process does not indicate that it is always the same process when once excited. This is quite in accord with the experience of surgeons and physicians who deal with cancer firsthand, because we see some that are very active, extremely malignant and always kill, sometimes within a few weeks, and others are slow, apparently benign, can be tampered with, treated by various conservative measures, the result being generally quite favorable.

All the clinical phenomena surrounding the different forms of cancer, I am sure, to every experienced clinical observer, must appear as very different diseases.

My opponent pursued the matter still further. He said, "Yes, the chemistry may be different on account of different rates of growth," as he claimed, "but the morphology of the process is very similar in all instances, whereas the inflammatory processes which are really different diseases differ enormously."

I spent a good many years in the study of the morphology of cancer. I need not tell those who gather at the Mayo Clinic that the morphology of cancer varies enormously.

Broders pointed out the great differences in the morphology of cancer and their great clinical significance. I think the proper answer to the statement that the morphology of cancer is one and the same, is that most of us old pathologists, who have been more or less specializing in the recognition of cancer, still have great difficulty at times in telling whether a process is cancer or is not cancer. In fact, I may say that the morphology of the cancer process differs more widely than the morphology of inflamma-

tory processes. Therefore, on causation, on metabolism, on morphology and on clinical grounds, we are justified in assuming that cancer is not one disease but a great group of diseases with very wide variations.

The specific character of different cancer processes also becomes much more impressive, when we enter the rather new field of the physiology of tumors. It is not an altogether new field, although its pursuit has been developed to a high degree in the last few years, especially the last decade.

From this study, it appears that cancers are not merely vagrant, malignant cells; they are organs, with very complex relations, affecting the body in a great variety of ways, and with such diverse effects that this type of evidence confirms our notion that cancers are different diseases.

Many years ago, it was shown that metastatic adenocarcinoma of the thyroid, benign, metastasizing thyroid struma, produced iodothylin. Today we know that most of the thyroid tumors, even metastatic, still exert this physiologic function, producing iodothylin.

Osteitis fibrosa cystica, Recklinghausen's disease of bone, is now known to emanate not from local conditions in the bone but from over-activity of the parathyroid gland, which very often shows tumors, which the surgeons recognize and remove, with a cessation of the disease, although local factors may determine the exact point in the bone or bone-marrow where the cysts or giant cell tumors develop. The whole thing is controlled by the hormone secreted by the parathyroid gland.

Recently, much interest surrounds those cases of hyperinsulinism, with insulin shock, in cases of tumors of the islands of Langerhans of the pancreas. These have been identified by Dr. Robertson in this clinic, the tumor removed, and the hyperinsulinism has disappeared.

For some years it has been known, from the Aschheim-Zondek test, that Prolan A, the secretion of the anterior lobe of the hypophysis, is present in the blood in considerable amounts in many malignant tumors, especially in tumors of the sex glands. It is present in teratoma testis, which is a form of pseudogestation in the male. It is present with nearly all the tumors of the ovary. It is particularly interesting in its relation to tumors of the testis.

Ferguson, in our laboratory, is now using the Aschheim-Zondek test, assaying the blood and urine, finding this reaction in cases of teratoma of the testis, in high proportions in those which most resemble chorioma, in smaller proportions in the less malignant tumors and in small proportions in the comparatively benign, slowly growing, adult teratomas. He is able to make a diagnosis of these testicular tumors on these reactions for Prolan A, and to determine in general the histological character of the process. The chorioma is a rapidly growing tumor, producing 40,000 or 50,000 units; the smaller adenomas 5,000 to 10,000, and the solid teratomas about 1,000 to 2,000. He has had much success with quite a series of cases, numbering over 100, in determining not only the presence of tumors as opposed to some other condition, but the actual histological type and the general prognosis of the case. Moreover, the reaction disappears when the tumor is removed, and returns in the urine before any detectable signs of recurrence are observed. The use of this test has become routine. I believe it has extended rather widely in many laboratories. It is found indispensable in following the course of these teratomas of the testis.

The ovarian tumors are no longer classified, or should no longer be classified, solely according to their structure. They never were satisfactorily classified according to structure. They are too numerous and too obscure. But now we are classifying them on the degree with which they affect the secondary sex characteristics of the individual. There are adenomas which have quite a marked effect in causing masculinization of the subject, in some instances almost approaching hermaphroditism. There is another group that Robert Meyer calls arrhenoblastoma, which produces peculiar masculinization, with growth of hair on the face and other parts of the body and changes in voice. There are still other tumors which produce various types of alteration in the bodily conformation and mentality of the patient.

We are classifying these tumors without much regard to structure, because each particular type varies in structure and the degree of masculinization which they produce.

There are other ovarian tumors which affect the endometrium and the breasts. These are of a different order, but they show they are produc-

ing the special hormone which causes these particular changes in other parts of the body.

We are less interested, then, in the exact morphology of ovarian tumors and devoting attention to the physiological properties.

Recently, Dr. Ferguson in our laboratory has brought to light an extremely interesting physiological reaction of a very common tumor, melanoma. The story is very interesting. Zondek found that a certain fish, *Elritza*, a German fish with brown spots on its belly, showed red spots during the breeding season, and he conceived the idea that this was due to some influence of the pituitary body upon the chromatophores. He injected the hormone of the intermediate portion of the pituitary gland into a number of fish, and he found that the *Elritza* was the only fish which reacted specifically. Normal subjects do not show intermedin in the blood. Ferguson conceived the idea that if this agent has a particular relation to the chromatophores, it may be in excessive proportion in melanoma. He injected the fish with the urine from a case of melanoma, and in twenty minutes the brown spots turned red. We are using this test for the diagnosis of melanoma with some satisfaction, because it requires pathologists to be very careful before making a diagnosis of melanoma, especially with non-pigmented tumors. This is another instance, a very dramatic instance, I think, of an important hormone relation of a common tumor, and we shall have to look at this tumor in a different light from the one we have been employing in the past.

These are some of the physiological properties which are specific for the different forms of malignant tumors. I have no doubt that similar relations control the origin and progress of some other tumors.

There is little doubt on the part of those who are most familiar with this subject that mammary cancer is very largely related to abnormalities of secretion of the sex glands. We already have some evidence to that effect. Our whole attack upon cancer today is directed from the point of view that these are specific diseases, with peculiar, general effects in the body, which we have been wholly neglecting up to a very recent time.

We might go on further in this theme of the specific nature of cancer, if we could take up the question of histogenesis and show how ex-

tremely specific the origin of the different tumors really is. Tumors do not arise from any tissue indifferently. They arise under extremely narrow conditions from Schwann cells or the nerve trunks or from the ganglion cells, or from embryonal portions of brain tissue in brain tumors or from the ducts of the breast, or from the sex cells of the testis.

All these facts relating to the general etiology, exciting factors, physiology, structure, and histogenesis of tumors, lead to the conclusion that cancer includes a great number of specific diseases each with its own peculiarities, which must be fully understood if the diseases are to be intelligently handled. A very important practical conclusion necessarily follows. We may no longer consider cancer as merely an occasional, although often substantial, phase of the work of the general surgeon or the specialist in different fields.

The medical profession has reached the conclusion that the time has come when specialization must be developed in the control of cancer. That movement has gained momentum the world over. We find everywhere in advanced medical centers the conclusion that much greater specialization must be developed if we are to give the cancer patient the best treatment. Therefore, we find cancer institutes and cancer hospitals and organized services in general hospitals, and general surgeons specializing more and more in particular fields of cancer. They always did specialize. Some of the leading surgeons of this country have devoted all of their splendid energies to the development of a single form, and, numerically, not a very important form, of malignant tumors, those of the brain and nervous system. There have always been specialists in the field of mammary cancer. One may go down the line and show that specialization is nothing new. I believe, however, there

is going to come greater specialization than we have now. To accomplish these results we must agree upon concentration of material as far as possible, organization of service and specialization in the study and treatment of cancer. In this way, the special surgeon or cancer specialist will gain enough experience to be able to anticipate complications, to know, when he meets a type of tumor, what is likely to happen, and to anticipate or prevent complications. I see that coming everywhere, even in institutions such as ours, where we see great numbers of cancers of all types. We make errors in diagnosis and treatment. I think we make fewer than we should have made if we had had less experience. Therefore, I believe personally in the concentration of cancer patients in cancer institutes.

Further, I think, in the education of doctors we have to recognize that some organization in this field is necessary, and that the undergraduate and postgraduate instruction in cancer may not be left to take its chance with the vicissitudes of the average college curriculum. Some coördinating officer is required to supervise this whole field.

We must start early with the work of training the younger men in the conception of the great scope and practical importance of the cancer field.

The medical profession also must be willing to continue its loyal and effective support of all the agencies which are now centered upon the education of the public and the improvement of facilities for the modern study and treatment of cancer.

We may, therefore, express full approval of the generosity of the good woman who has aided substantially in the work in this direction, at Minneapolis, and has created this lectureship which I have had the pleasure and honor of filling this morning.

TRANSURETHRAL ELECTRIC RESECTION OF THE PROSTATE*

HERMAN L. KRETSCHMER, M.D.

Chicago

THIS paper is based upon a review of 282 transurethral resections performed upon a series of 259 patients. During the past eighteen months I have performed only one prostatectomy and this in a patient in whom it was impossible to introduce the resectoscope (because of the enormous size of the prostate) although three different attempts were made to do so. Of the 282 transurethral resections, twenty-three patients had multiple resections, that is, in about 8 per cent a second resection was necessary. In some of the very large prostates, that is, in cases with very large lateral and middle lobes, the middle lobe and one of the lateral lobes were removed at one sitting and the remaining lobe at a subsequent resection. In some of the early cases not enough tissue was removed and a second resection was necessary.

Age Incidence.—The youngest patient upon whom a resection was performed was thirty years of age and the oldest was eighty-nine. A review of the age incidence is given in the following table.

Years	Cases
30-40	2
40-50	7
50-60	52
60-70	121
70-80	64
80-90	13

Duration of Symptoms.—The onset of prostatic obstruction is a very gradual one and the development of symptoms is slow. The course of the disease is progressive. A review of the duration of symptoms in this series showed the following:

Years	Cases
1- 5	165
5-10	61
10-15	21
15-20	12
Average	4.22

*Presented at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 23, 1933.

Infection.—In a great number of cases there occurs sooner or later some infection of the urinary tract that requires pre-operative treatment. In this series of cases bacteriologic study of the urine showed the following:

B. coli.....	69 cases
Staphylococcus albus.....	57 cases
Streptococcus hemolyticus.....	10 cases
Staphylococcus hemolyticus.....	6 cases
B. coli hemolyticus.....	3 cases
B. proteus.....	2 cases
Eberthella	1 case

Total number cases infected..... 148

Residual Urine.—When a patient with prostatic obstruction consults the physician, examination shows the presence of residual urine. The amount varies in each case and may change from day to day in the same patient. In the following table are given the number of cases and the amounts of residual urine over 250 c.c. up to complete retention.

Complete retention.....	52 cases
500-1000 c.c.	21 cases
250- 500 c.c.	33 cases
	106 cases

Preparation of Patients.—It is of prime importance that the infection be controlled or entirely cleared up, if possible. The internal administration of urinary antiseptics as well as a large quantity of fluid is part of our routine. Fluids are administered by mouth, per rectum, and, in rare cases, normal salt solution is given subcutaneously. In the cases of mild infection, massage of the prostate with instillations and irrigations will suffice. In the more severe infections it is necessary to employ an indwelling catheter. Finally, suprapubic cystotomy may be necessary where the indwelling catheter fails to clear up the infection or where its presence produces pain, bleeding, profuse discharge, or

reactions in the form of chills and fever. Where complications, such as large stones, are present, it may be necessary to do a suprapubic cystostomy.

The following table gives the method of preparation which was employed in this series:

Indwelling catheter	118 cases
Suprapubic cystostomy	30 cases
Massage and irrigations.....	32 cases
No preparation	79 cases

Associated General Conditions.—It is of great importance in this group of patients that the patient have a comprehensive physical examination and an accurately written history. Many of these patients suffer from organic diseases involving other parts of the body, which call for treatment before the resection is undertaken. You are all familiar with the fact that a large number of patients with prostatic enlargement have some disturbance of the cardiovascular system. Many of these need preoperative study and treatment. A certain number have other organic lesions.

Patients with cardiac disease, when first seen, appear to be poor surgical risks but after proper treatment the majority can be safely operated upon. There will always remain a limited number in whom the cardiac function can never be improved sufficiently so that a major surgical procedure is justifiable. But it is especially in the cardiac group of cases that this form of treatment has a wide field of usefulness. Formerly patients who had had attacks of angina or coronary disease were looked upon with a great deal of apprehension regarding their ability to withstand a surgical procedure, but today, by means of transurethral resection, their equilibrium remains undisturbed.

The following table shows the incidence of associated organic lesions found in this series:

ASSOCIATED DISEASES

Cardiovascular System

	Cases
Myocarditis	119
Coronary disease.....	18
Angina	9
Hypertension	45
	191

Diabetes	12
Lues	6
Cord bladder.....	4
Pulmonary embolism.....	2
Bronchial asthma.....	2
Cerebral thrombosis.....	2
Carcinoma stomach, liver.....	2
Hemiplegia	1
Manic depressive psychosis.....	1
Paralysis agitans.....	1
	33

Associated Genito-urinary Disease.—As a result of obstruction at the vesical orifice there develops, sooner or later, definite damage to the bladder and upper urinary tract with resulting stasis which predisposes to infection. Hence, a matter of great importance is a complete and careful survey of the entire urinary tract in each case before resection is done. In the following table the incidence of associated findings is given.

ASSOCIATED GENITO-URINARY CONDITIONS

	Cases
Diverticula of bladder.....	24
Bladder calculi	14
Carcinoma of bladder.....	11
Prostatic calculi.....	8
Kidney calculi	6
Ureteral calculi	2
Solitary kidney	2

Postoperative Course.—One of the most encouraging phases of this form of treatment has been the mild postoperative course. As previously mentioned, the stay in the hospital is very short and shock is absent. The general condition of the patient the day after operation stands out in marked contrast to that of the patient who has undergone a surgical prostatectomy. In other words, the patient who has been subjected to a surgical procedure is generally quite ill the day after, whereas the patient who has had a resection is well enough to sit up in bed and often is reading the morning paper when the physician makes his rounds.

Postoperative Stay in Hospital.—While it is true that a certain number of patients who have had prostatectomies do not stay in the hospital very long after operation, the average patient, if one takes the cases as they come, spends a long time there. The average stay of prostatectomized patients has been variously estimated to be from three to six weeks.

For purposes of discussion I have divided the cases in this paper into two groups. In Group I are the patients who have been prepared with the indwelling catheter, intermittent catheterization, massage and irrigations. A review of this group shows that the average duration of hospital stay was 8.5 days. Cases with median bars and small middle lobes naturally stay a much shorter time than those with large hypertrophies. The shortest stay in the hospital has been two days.

Group II consists of the patients who have had cystostomies because of complications in the bladder, such as diverticulum, stone, or severe infection, which precluded the preparation of the patient by an indwelling catheter. Also in this group are patients who have had suprapubic cystostomy as a palliative treatment for carcinoma of the prostate. This group comprises 30 resections. The average stay in the hospital was 15.5 days.

ANALYSIS OF POSTOPERATIVE HOSPITALIZATION

Cases prepared by suprapubic cystostomy.....	15.5 days
Cases prepared by catheter.....	8.5 days
Cases receiving no preparation or only massage	7.0 days
Average stay (all cases).....	8.6 days
Shortest stay (all cases).....	2.0 days

Postoperative Temperature.—Early in the use of electroresection it became apparent that fewer patients had temperature reactions, and when postoperative fever occurred it was of much shorter duration than in patients who were surgically treated.

The temperature following this procedure may be due to one of three causes. First, it is a well known fact that following instrumentation such as the passage of sounds, catheters, bougies or cystoscopes, many patients develop a fever. Second, the temperature may be prostatic in origin. A large number of patients with prostatic obstruction have an associated infection and following the resection the fever may be due to a lighting up of a previously present infection in the prostate. The third cause for temperature in a large group is pyelitis or pyelonephritis. The onset of fever with or without a chill, with pain and tenderness in the renal area makes the diagnosis easy. In a certain number of cases in which fever is present but pain and tenderness are absent, it is possible that the patient may have a mild pyelitis, severe enough to produce

temperature reactions and yet not produce enough pain to call attention to the possible renal origin of the fever. From an academic standpoint this question could be determined by ureteral catheterization but it is my opinion that it is not of sufficient importance to justify ureteral catheterization.

An analysis of the temperature reactions is given in the following table:

POSTOPERATIVE TEMPERATURE

Having no temperature.....	17 resections
Having had temperature.....	265 resections
Average duration of temperature.....	2.4 days
Temperature for 1 to 2 days only.....	168 resections

TEMPERATURE RANGE

Temperature	Resections
99-100°	75
100-101°	88
101-102°	51
102-103°	24
103-104°	26
104-105°	1
Fever	265
No fever	17
	282

Hemorrhage.—A certain amount of blood persists in the urine for a few days following the resection, the amount depending in part upon the care and attention given the control of bleeding at the time of operation. I try to have the patients go back to the room free or relatively free from bleeding. In some of the smaller prostates many patients go back perfectly dry and in others the urine is clear the next day. In the average case, however, the urine is blood tinged for two or three days. A small amount of bleeding may persist in an occasional case for a week; that is, after the patient has left the hospital a few specks of blood may be found in the voided urine.

Secondary bleeding occurs in a small number of patients, beginning generally on the tenth or twelfth day. Similar to what occurs after surgical procedures in any other part of the body, secondary bleeding is nearly always due to infection. This is not surprising if we bear in mind that many of these patients had infections before resection.

Secondary hemorrhage in this series occurred in six cases.

The management of secondary hemorrhage has been along the following lines: In a good many cases the bladder fills with blood clots and these we evacuate with a Bigelow evacuating canula and pump followed by irrigations of the bladder with a mild potassium permanganate solution. This simple procedure serves to control the hemorrhage in most cases of secondary bleeding. In some cases it was necessary to control the bleeding with the resectoscope. As a rule, after the resectoscope has been introduced the bleeding point can be seen and the fulguration current applied directly to it. In some instances, instead of fulgurating the bleeding point, I have excised the bleeding area so as to have a fresh, clean, non-infected area for wound healing.

Epididymitis.—In the early part of the series no attempt was made to prevent epididymitis for the specific purpose of determining whether or not epididymitis occurred more frequently following resection than after suprapubic prostatectomy. A review of the first 110 cases showed that in this number there were fifteen cases of epididymitis. Since that time we have made it a routine to obtain the patient's permission for vasectomy in all cases except in relatively young men. Since the establishment of routine vasectomies we have had no further complications of this type. It is a simple procedure to remove about an inch of the vas deferens and this, I believe, more completely prevents epididymitis than does the subcutaneous ligation.

General Complications.—I have been greatly impressed by the absence of general complications following the use of the resectoscope. A review of this series of resections shows the following postoperative complications.

	Cases
Singultus	6
Bronchopneumonia	2
Psychosis	2
Pulmonary embolism.....	1
Cerebral thrombosis.....	1
Parotitis	1

Persistence of Symptoms Following Resection.—Because of the relatively short stay in the hospital and because the patient is up and about there are certain symptoms that are more frequently emphasized on the part of the patient than when the patient has had a suprapubic prostatectomy followed by a long stay in the

hospital. Under the latter circumstances, when the patient's fistula heals, he leaves the hospital; wound repair of the prostatic bed has generally been complete and the symptoms are mild. Following transurethral resection the wound is not healed at the end of a week when the patient leaves the hospital and, naturally, certain annoying symptoms are present. Chief among these are frequency, pain and burning on urination. It is extremely gratifying, however, to see how rapidly these symptoms disappear. As a rule they persist for a week or ten days after the patient leaves the hospital, but are readily controlled by means of alkalies and sitz baths.

Residual Urine.—In some cases a certain amount of residual urine is present after the patient leaves the hospital, but in my experience this clears up rapidly; hence it cannot be considered a disturbing element. I would like to mention one particularly striking case, a patient, eighty-eight years of age, who had a residual urine of 2,000 c.c. before resection. When he left the hospital he had six ounces of residual urine and with catheterization and irrigation this was reduced to one ounce. In several cases it was necessary to do a second resection to relieve this condition completely.

Incontinence.—In a few instances the difficulty in controlling the urine was such that the patients were obliged to wear a cloth after leaving the hospital, but under treatment this condition rapidly cleared up. In one case of carcinoma of the prostate the incontinence was disturbing for a long time, probably because the carcinoma was extensive and had infiltrated the sphincter so that it was injured during the resection, and in one case of benign hypertrophy the patient wears a glove at night, although on many mornings his glove is dry.

Mortality.—In this series of 282 resections there were eleven deaths, a mortality of 3.9 per cent.

SUMMARY

Transurethral resection for the treatment of bladder neck obstruction, either benign or malignant, is a distinct advancement in treatment. It makes treatment possible in a group that heretofore were denied major surgery. A short period of hospitalization is an added advantage to many people, particularly at the present time.

122 South Michigan Avenue

LIPOMA OF THE CAPSULE OF THE JOINT REMOVED SUCCESSFULLY: PRESENTATION OF THREE CASES*

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TWO distinct types of lipoma of the capsules of the joints have been described. The first type represents a true lipoma arising from the extracapsular fat. The second type is the so-called lipoma arborescens and is usually described as intracapsular; it represents an unusual type of involvement of the synovial membrane with markedly hypertrophied villi; often excessive deposits of fat are present. The three cases reported here belong to the first group; the lipomas arising from the extracapsular fatty tissues.

REPORT OF CASES

Case 1.—A man, aged forty-eight years, complained of painless, gradually increasing swelling on the inner side of the right knee which had been present for several months. There was no history of injury.

Examination disclosed an elongated mass lying beneath the vastus internus muscle on the anterolateral surface of the lower end of the femur. The mass could be fairly well outlined and was not attached to the bone. The roentgenogram showed the outline of the tumor clearly and a diagnosis of lipoma was made (Fig. 1).

The lipoma, weighing 40 gm., was excised from the extracapsular fat of the knee joint. It lay directly beneath the vastus externus muscle. The patient's recovery was complete when he was last heard from early this year.

Case 2.—A man, aged thirty-five years, had noticed progressive enlargement of the upper portion of the left thigh for about five months. At no time had there been any pain. A week before admission to The Mayo Clinic operation had been performed elsewhere, at which time exploration was apparently done but tissue was not removed. The patient's family were informed that he had an inoperable sarcoma.

Examination disclosed a mass about 10 cm. in diameter lying beneath Poupart's ligament on the upper mesial border of the thigh. It was not tender. A sense of fluctuation resembled that of a cold abscess but evidence of tuberculosis of bone could not be detected. A shadow in the roentgenogram in this region was typical of the consistence of a lipoma, and a preoperative diagnosis of lipoma was made (Fig. 2). A lipoma, weighing 338 gm. was removed from the thigh. It had originated from the pericapsular fat of the hip joint in the region of the lesser trochanter. The patient's convalescence was uneventful and when

last heard from a year or more after operation he was in good health.

Case 3.—A woman, aged forty-one years, had complained of pain in the region of the left hip and but-



Fig. 1 (Case 1). Anteroposterior and lateral views of knee joint; the shadow of a lipoma beneath and mesial to the quadriceps tendon may be seen.

tocks for about five years, and for about eleven months had noticed gradually increasing swelling. Five months previous to her admission to The Mayo Clinic an operation had been done elsewhere and a portion of the tumor excised. The swelling and pain persisted, however, with occasional severe paroxysms of sciatic pain.

An extensive swelling of the left buttock and hip extending forward beneath Poupart's ligament was found. Rectal and pelvic palpation disclosed a distinct mass about 8 cm. in diameter inside the pelvis in the region of the greater sciatic notch on the left side. The extensive shadow in the roentgenogram was that of a typical lipoma (Fig. 3).

At exploration the pelvis was opened retroperitoneally through a long oblique incision. The tumor was found to lie behind and beneath the iliac vessels in such a position as to be inaccessible from an anterior approach. The abdominal muscles were closed over this area and from below the iliac crest the fascia lata was separated well back toward the posterior superior spine of the ilium. The gluteus maximus and medius muscles were retracted and the entire tumor was removed. It had originated from the extracapsular fat about the hip joint, and extended over the entire lateral wall of the ilium; a portion of it, about 8 cm. in diameter, had pushed its way through the sacrosiatic notch into the pelvis and had forced its way down along the sciatic nerve posterior to the femur. It had also grown anteriorly along the neck of the femur to the region be-

*From the Section on Orthopedic Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 21 to 24, 1933.

neath Poupart's ligament. The tumor weighed 1,330 gm. Recovery was uneventful and the patient has recently written that her health has practically returned

these extracapsular lipomas arising in the region of the buttocks. Kuttner, Müller, and Weitzner have described cases similar to Case 3 of this



Fig. 2 (Case 2). Roentgenogram of a large lipoma surrounding the upper end of the femur adjacent to the joint capsule.

to normal, although there was a prolonged period during which she suffered from pain suggestive of sacroiliac strain.

COMMENT

The demonstration of these tumors by roentgenogram is most important from the diagnostic standpoint. One may suspect the presence of a lipoma by palpation, but in each of these cases the roentgenogram indicated the probable diagnosis. Laurell credits Köhler with first pointing out the roentgenologic evidence in these cases. Sutherland has demonstrated the roentgenologic appearance of lipomas as have other roentgenologists. The lipoma must become fairly large before a roentgenologic diagnosis is possible, although if small lipomas are situated favorably, their presence may be demonstrated. In any tumor of appreciable size of the soft parts of an extremity, the roentgenogram should be enlisted as a diagnostic aid. Lipomas may occur in any part of the body where there is fat tissue. Several reports have been noted in the literature of

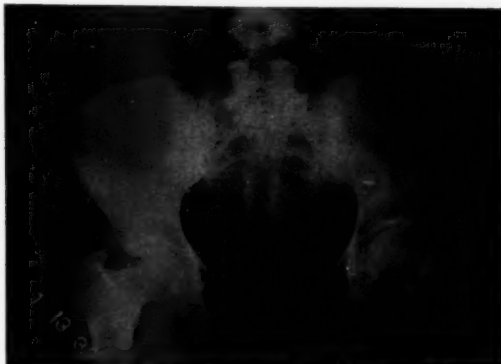


Fig. 3 (Case 3). Roentgenogram of the pelvis with an extensive lipoma involving the region of the left iliac fossa and surrounding the upper end of the left femur. The shadow which represents one edge of the lipoma passes through the date line on the roentgenogram.

series. In all of these cases pressure on the sciatic nerve produced complicating symptoms.

Other observers have reported cases of intramuscular and intermuscular lipomas, some of which may have had their origin from the region of the capsule of the joint. These tumors can be removed without serious difficulty, although it should be pointed out that in two of the cases reported here unsuccessful attempts at removal had been made before the patients were admitted to the clinic. The results with complete removal are excellent and well justify the surgical risk.

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OCCIPUT OBLIQUELY POSTERIOR*

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THERE is perhaps no abnormal presentation of the fetus that has received more attention than has occiput obliquely posterior. However, the degree of seriousness accorded it varies widely in different clinics, due to the fact that the methods in different clinics vary widely in the manner in which labor terminates.

After seeing labor, with this presentation, conducted in both the conservative and radical clinics of this country, I have very definite ideas as to which of these two clinics should be followed by the general practitioner, and I would like it understood from the beginning that I want this paper to be considered a plea for conservative treatment.

I assume that this paper is being read for the benefit of the general practitioner and I think that, too often when discussing this subject in the past, we have assumed all our listeners to be specialists, or at any rate that a procedure which would be in the best interests of the mother and child, when conducted by a specialist, would be equally in her interest, when by the man in general practice.

I am little concerned with the way in which a well-trained man, with ten or fifteen years of experience, conducts a labor. He is a duffer indeed if, after concentrating on one branch of medicine for such a long time, he cannot perfect his technic so that whatever procedure he may adopt, he can "get away with it." From such men, who are forgetting the general practitioner, we have recommended to us such procedures as the Scanzoni maneuver, the lock and key procedure, version and extraction in occiput posterior, the prophylactic forceps, and the prophylactic version or "Potter twist." What the general practitioner should say to himself is: "I know my lack of skill. I know the conditions under which I have to work. Now what procedure, in my hands, is safest for this mother and her babe?" I am convinced that any sane man, who takes this attitude, will choose the conservative course.

Contrary to what some of the text-books say, the O.D.P. position is next to the O.L.A. in frequency. The reason for this is evident. When, as a result of uterine contractions, force is transmitted through the vertebral column to the head, the longest available diameter of the inlet is sought. This is the right oblique. In the vast majority of cases, the sagittal suture will enter this oblique. If the occiput is on the left, the presentation is O.L.A, if on the right it is O.D.P. The head having entered the bony ring, no change of presentation takes place, when there is no disproportion between the head and the pelvis, until the head passes the spines and emerges on the levator sling. In the normal primipara the occiput then begins to rotate anterior, this rotation persisting until the occiput finally impinges under the symphysis, and the head distends the perineum. In primiparæ, where there are no abnormalities of the head or the pelvis, and also usually in multiparæ, the mechanism of labor is often different from that described above, but we are not concerned in this paper with abnormalities, and occiput posterior rarely offers serious difficulties in the multipara.

If my contention is correct that in the hands of a relatively unskilled man the patient and her baby are safest if labor is handled conservatively, it might be well for me to outline in brief my conception of what is meant by conservative treatment of a case of occiput obliquely posterior.

In the first place, most primiparæ begin their labor with several hours of weak irregular pains. I suppose we are all convinced that these pains accomplish little or nothing. Unless the pains are constant in interval and constant in duration, the cervix, while it may be slightly effaced, is very little dilated. Weak, irregular pains, however, will sap the patient's vitality just as badly as strong effective pains. I think that it is entirely erroneous to say that while the patient is having these ineffective pains, she is in labor. In any case, the thing to know is that they are of very little value and should not be allowed to persist beyond a few hours.

*Presented before the Minnesota State Medical Association, Rochester, May 22, 1933.

If after four or five hours the pains are still irregular and of short duration and the patient is in good condition, she should be stimulated with castor oil or quinine, or preferably both.

cannot conduct a labor intelligently if we get our information concerning pains by talking with the patient on the telephone. The duration of a pain can be measured in only one way, and that is by

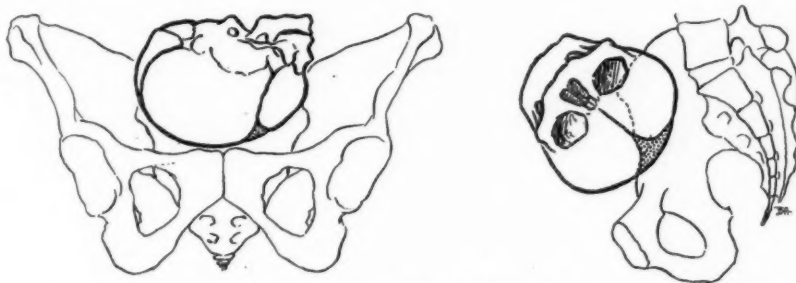


Fig. 1. Head at onset of labor before entering the bony ring; sagittal suture transverse.

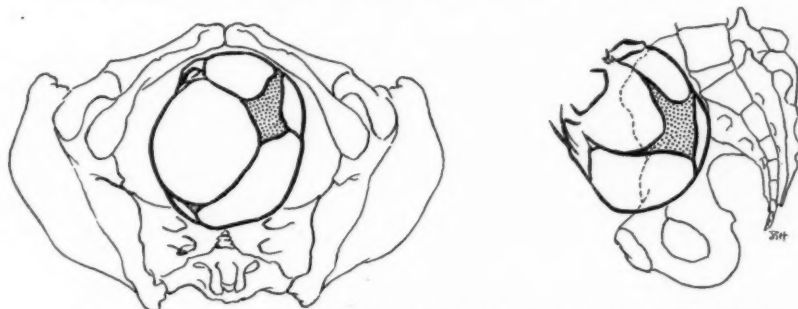


Fig. 2. Head just below the inlet, slightly flexed, O.D.P.; sagittal suture in right oblique.

Not more than two ounces of castor oil and certainly not more than a total of twenty grains of quinine should be given. A hot enema is also very often of great value.

If, however, after four or five hours of irregular pains, the patient evidently needs a rest, or attempts at stimulation have been unsuccessful, she should be given one quarter grain of morphin, with a full dose of some hypnotic. The morphin should be repeated, if necessary, in three hours with the idea of stopping the useless pains and allowing the patient to sleep, if only for a few hours. In the vast majority of cases, measures calculated to stimulate will be successful; where they are not, the patient will often go into labor after she has had a few hours of sleep. In any case, such measures prevent useless dissipation of nervous energy.

How can we tell the duration of a pain? The answer is known to all, but I am afraid that the knowledge is practiced only by the few. We

holding the watch in one hand, placing the other hand on the fundus, and noting carefully the time from the beginning of contraction, to the beginning of relaxation. This takes a little time and patience, but the importance of the information thus gained is absolutely essential if we are to treat the patient conservatively in fact, as well as in name.

When regular pains have finally started and the patient is definitely in labor, the two things claiming our constant attention, throughout the first stage of labor, are sedatives and food.

Different doctors favor different sedatives. Pentobarbital, sodium amytal, and morphin, and scopolamine seem to be the favorites. Whatever our preference may be, it must be clearly borne in mind that any adequate dose of sedative will, in the majority of cases, measurably shorten the duration of the pain.

If labor is shortened, because of the administration of the sedative, this result is accomplished

by the effect of the sedative, in softening the cervix. Our aim, however, in giving the sedative is primarily to conserve nervous energy.

If sedatives ordinarily shorten pains, then they

wholly free from the influence of drugs. This is necessary if she is to use her abdominal muscles most effectively and it is only when this can be done that the majority of primiparæ with an

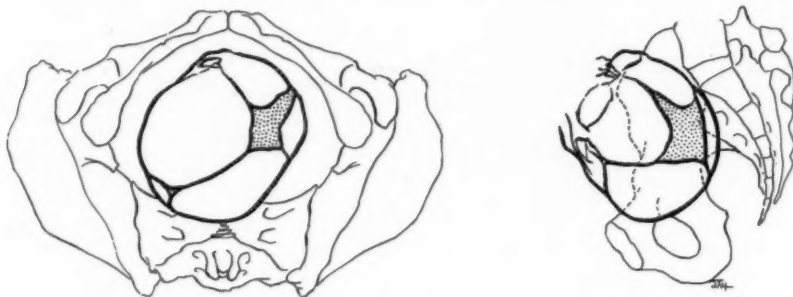


Fig. 3. Head slightly below the spines; rotation just beginning.



Fig. 4. Head 2 cm. below the spines; occiput rotated 45 degrees; sagittal suture transverse.

should not be given unless the pains are of such duration that they are not made weak and irregular and consequently ineffective by the administration of the drug. Personally, I prefer to wait until the pains are constant in interval and 35 to 40 seconds in duration, before giving any medication. Of the three drugs mentioned above, I personally prefer morphin and scopolamine. It will be noticed, however, that I do not use them ad lib as for twilight sleep, which I believe has been more of a curse than a blessing in obstetrical work. My own plan is to give one-sixth of morphin and one two-hundredth of scopolamine every four to six hours, providing the pains remain 35-40 seconds in duration, but not after the cervix is 8 or 9 centimeters dilated. This routine usually necessitates one, two or at most three injections during the first stage of labor, in the average primipara.

The reason for discontinuing sedatives when the cervix is 8 or 9 centimeters dilated, is that the patient should enter the second stage of labor

occiput obliquely posterior position can deliver without operative interference.

Food, as a factor in sustaining the patient, has been altogether too widely neglected. The attitude of many doctors seems to be that if the patient does not feel like eating, she should not be urged to eat. This shows a woeful lack of understanding of the physiology of labor. If the workman needs to eat, in order to use his biceps, surely the patient using her uterus intermittently, over a period of ten, twelve, or eighteen hours, needs food in order that that organ may function properly. Nor should nourishment consist entirely of fluids. Small amounts of solid food, together with hot drinks, should be given rather frequently. If there is a probability of operative interference, all food should be discontinued when the cervix is eight or nine centimeters dilated.

Occasionally, even where everything possible is done to conserve the patient's energy, labor is still markedly protracted beyond the average du-

ration of the first stage. In such cases the patient often becomes so exhausted that a few hours of sleep are indicated. The doctor who is carefully conducting labor will try to secure this rest

proximately one-half, and I know from personal experience, that in his clinic, only twice in ten months, was operation necessary in occiput posterior positions.

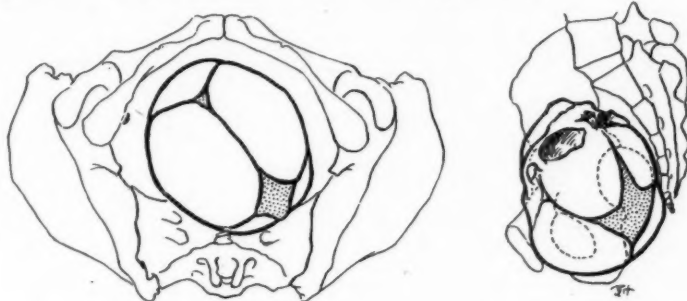


Fig. 5. Head on perineum; occiput rotated to O.D.A.

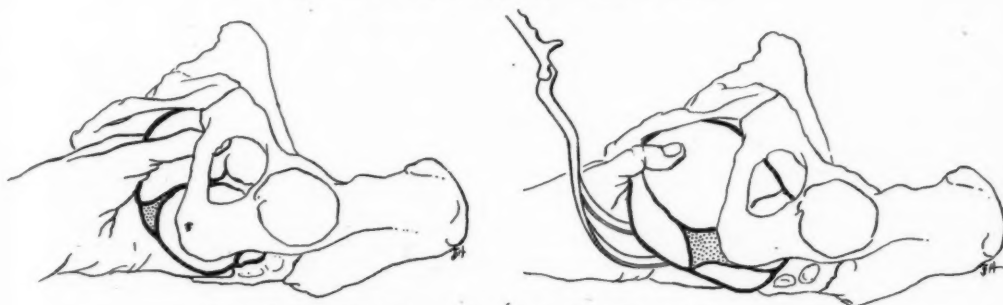


Fig. 6 (left). Sagittal suture transverse; head grasped ready for rotation.
Fig. 7 (right). Head rotated to O.D.A.; right blade of forceps being applied.

before the end of the first stage. There are, of course, different ways in which this may be done. I prefer morphin gr. $\frac{1}{4}$, scopolamine gr. $\frac{1}{500}$ and veronal grs. V. I doubt the wisdom of giving sodium amytal for this purpose, as its action is too prolonged.

When the patient has entered the second stage of labor, the doctor's place is by her side. I regard the conduct of the second stage in O.D.P. positions as of even greater importance than that of the first stage. During every pain the patient's thighs are flexed on her abdomen and she is encouraged to take a deep breath, hold it, pull on her straps and bear down. If she is in the hospital she should be given gas during the actual duration of the pain. Another important thing, of which I believe many doctors are unaware, is the Beck binder. In occiput obliquely posterior positions in primiparae, this binder should be applied as soon as the cervix is fully dilated. Beck has demonstrated, beyond a shadow of doubt, that its use reduces the duration of labor to ap-

A question sometimes asked is how long should the patient be left in the second stage. At the University Hospital, where we are very definitely committed to conservative measures in obstetrics, the patient is allowed to continue in the second stage for three hours, or even longer, providing the fetal heart tones are normal and the general condition of the mother is good.

Infrequently, even when every possible measure is taken to insure spontaneous delivery, the occiput for one reason or another fails to rotate. Of all the methods which have been devised for handling such cases I believe manual rotation to be the best. The rule in obstetrics is, of course, to apply the left blade first, but if the presentation is O.D.P. the right blade should be applied, following rotation, before the removal of the hand. This blade can then be held in position by the assistant, while the obstetrician applies the left.

The general practitioner should forget the key

and lock maneuver and the Scanzoni double application of forceps. There are some obstetricians, who, after prolonged practice, have become more or less skillful in version and extraction in posterior positions, but inasmuch as in unskilled hands one breech in three is lost during extraction, I doubt the wisdom of recom-

mending this method for general use.

In conclusion, may I again emphasize the importance of sedatives, food, and the binder, in the conservative handling of the case, and I am confident, from experience, that if these things are properly used, the devices of the trickster will seldom be found necessary.

MECKEL'S DIVERTICULUM IN A HERNIA: REPORT OF A CASE*

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OF all reported cases of Meckel's diverticulum in hernia, in slightly more than half the abnormality has been found in the inguinal region, and the majority of these on the right side. In almost one fourth of the cases, the diverticulum was in an umbilical hernia, and in almost another fourth, in a femoral hernia. These and other facts are expressed numerically in Table I.

Age was found to be a factor only in the cases of diverticulum in umbilical hernia; among the twenty-five such cases included in Pabst's review, nineteen of the patients were newly born or very young infants, and the age of the remaining six patients was not stated. The average age of the patients with diverticulum in inguinal hernia was thirty-five and six-tenths years; the youngest was aged one year and three months, and the oldest, seventy-seven years. Of the twenty-four patients with diverticulum in femoral hernia, the average age was forty-eight and seven-tenths year; the youngest was thirty years, and the oldest, seventy-six years. Among the patients who had diverticulum in inguinal hernia there were three times as many men as women, whereas just the reverse obtained in regard to the patients who had diverticulum in femoral hernia. The sex of the infants with diverticulum in umbilical hernia was given so infrequently that no reliable data could be obtained.

The choice of surgical procedure depends chiefly on individual circumstances. If the base of the diverticulum is of such size that it can be treated as the stump of the appendix commonly is treated, by ligation and inversion, with-

out rendering inadequate the diameter of the intestinal lumen, this is perhaps the best procedure. However, excision of the diverticulum, with transverse closure, may be necessary. If

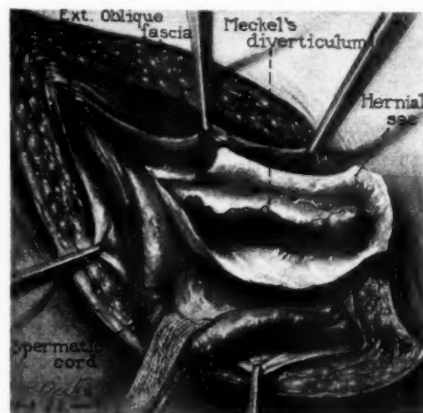


Fig. 1. The structures exposed at operation.

there is any doubt as to the patency of the intestinal lumen, entero-anastomosis should be made to insure against occlusion. The whole structure may be returned to the abdominal cavity, the rupture repaired, and a separate incision made to remove the diverticulum. In this manner, the field in which the hernia is repaired is protected against possible soiling.

Meckel's diverticulum in inguinal hernia has been reported so rarely, that to place on record one such case that has been observed recently seems justifiable.

*From the Division of Surgery, The Mayo Clinic, Rochester, Minnesota.

REPORT OF CASE

A French-Canadian laborer, aged thirty-eight years, entered The Mayo Clinic April 22, 1933, complaining of a hernia which, he said, had been present for six months. Otherwise, his general health had been good. When first noted, the protrusion of the abdominal wall in the right inguinal region had been about 2.5 cm. in diameter and had been noticeable only when the patient was on his feet. There had been a dull, aching pain in the inguinal region. The patient gave no history that would indicate that incarceration had taken place, nor had he ever worn a truss. His systemic history was essentially negative.

The patient was rather thin, although well developed. The right external inguinal ring was not enlarged. On the patient's coughing, a soft swelling, about 5 by 2 by 2 cm. could be felt over the right internal inguinal ring and swelling was also palpable along the canal. This could be replaced with ease. Examination in other respects was essentially negative.

Exploration through a right inguinal incision revealed

a right indirect inguinal hernia, the sac of which extended down to just below the external ring. The sac

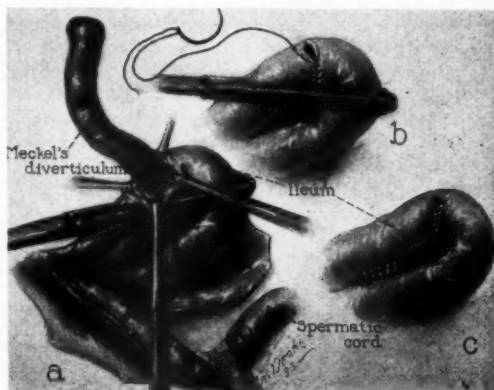


Fig. 2. Method of excision and repair.

TABLE I. REPORTED CASES OF MECKEL'S DIVERTICULUM IN HERNIA

Author and year	Cases	Inguinal	Femoral	Umbilical
Pabst, Beitr. z. klin. Chir., 69:646, 1910	123*	66	24	25
Wellington, Surg., Gynec. and Obst., 16:74, 1913	27**	14	2	10
Burianek, Quoted by Sweet	1	0	1	0
Harf, Deutsch. med. Wchnschr., 2:881, 1919	1	0	1	0
Quénu, Bull. Soc. Anat. de Par., 91:206, 1921	1	1	0	0
Bettman, Internat. Clin., 3:126, 1921	1	1	0	0
Ludbrook, Brit. Jour. Surg., 10:297, 1922	1	0	1	0
Brodnax, Jour. Am. Med. Assn., 82:440, 1924	1***	0	0	0
Lanman, Boston Med. and Surg. Jour., 190:926, 1924	1	1	0	0
Little, Brit. Med. Jour., 1:517, 1924	1	0	1	0
Harrington, Surg. Clin. N. Amer., 6:1188, 1926	1	0	1	0
Bianchi, Gazz. d. osp., 48:651, 1927	2	1	0	1
Oliva, Gazz. d. osp., 48:1013, 1927	1	1	0	0
Sicard, Bull. et mem. Soc. nat. d. chir., 54:478, 1928	1	0	0	1
Reid, Brit. Med. Jour., 1:394, 1928	1	1	0	0
Pollidori, Riforma med., 46:682, 1930	2	2	0	0
Sweet, New England Jour. Med., 202:997, 1930	1	0	1	0
Donati, Policlinico, 38:278, 1931	1	0	1	0
Gray, 1933. Present report	1	1	0	0
Totals	169	89 (52.6%)	33 (19.5%)	37 (21.8%)

*One of the 123 cases observed by Pabst himself. To make the total 123, add one retrocecal hernia and seven cases in which the situation was not stated.

**In four instances the references given by Wellington were included in Pabst's series; undoubtedly, there were others but this could not be determined definitely. To make the total twenty-seven, add one case in which the situation of the hernia was not stated.

***Through the greater sciatic foramen.

was isolated from the spermatic cord and was found to contain an indeterminate structure which was densely adherent to the posterior wall of the sac. The proximal end was lost within the internal ring (Fig. 1). This structure was thought to be the appendix, but after the adhesions which bound it to the posterior wall of the sac had been separated, and the proximal end of the structure had been delivered from within the internal ring, it was seen to be attached to the small bowel. There was no distinct mesentery, but several tortuous vessels traversed the structure longitudinally. The base of the diverticulum was somewhat dilated, measuring approximately 2.5 cm. across. For this reason, it did not seem wise to ligate the stump, with subsequent inversion. The diverticulum was removed by a longitudinal, elliptical incision in the bowel, ap-

proximately 3 cm. in length. In order to maintain an adequate lumen, the incision in the bowel was closed transversely (Fig. 2). As a further precaution against occlusion of the bowel at this point, a small entero-anastomosis was made, which shunted the direct intestinal stream around the original suture line. Great care was exercised to guard against contamination of the wound, and all intestinal contents were then returned to the abdominal cavity through the internal ring. The sac was ligated, excised, and transfixed. The abdominal wall was repaired by approximating conjoined tendon to shelving edge of Poupart's ligament, and lapping the external oblique fascia over the spermatic cord. Convalescence was uneventful and the patient was dismissed from the hospital on the sixteenth postoperative day.

THE CARE OF THE PREMATURE INFANT*

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THE care of the premature infant has always been a difficult and trying problem in the large municipal hospital. Not one or two, but instead as many as twelve premature newborns must be observed at one time. The various methods used from year to year to bring about the best results in the management of these small infants have always been of great value in perfecting a more suitable program.

At the Minneapolis General Hospital we have passed through several phases during which different procedures have been used. During the past year a method has been followed which is characterized by its simplicity and by the fact that it permits a fairly large number of premature infants to be rather easily handled with satisfactory results.

It is the purpose of this paper to present our experiences and to emphasize the factors which must be given special consideration in the care of the premature infant. From July 1, 1932, to July 1, 1933, 1,803 babies were admitted to the newborn nursery of the hospital. Of this number 139 were considered premature newborns. There were seventy-three male infants and sixty-six female.

*From the Department of Pediatrics, University of Minnesota, and the Pediatric Service, Minneapolis General Hospital. Presented before the Northwestern Pediatric Society at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 22, 1933.

PREMATURE MORTALITY

Forty-seven premature babies (34 per cent) died and twelve of these never responded to the usual methods of resuscitation and stimulation for they expired within one hour of birth. Another nineteen responded fairly well at first, but their condition again became bad, and they died before the end of the rest period, which is the first sixteen hours of life, during which the infants receive no water or food, and are not disturbed unless resuscitation is necessary. Six more babies had intermittent cyanosis throughout the first and second days of life. They expired within forty-eight hours of birth.

Thirty-seven premature infants (27 per cent) died within the first two days of life, and it is interesting to note that irregular breathing and cyanosis were the outstanding clinical findings in practically all these babies. The autopsies revealed in almost every instance intracranial hemorrhage, pulmonary atelectasis, or both. There were only three exceptions. One infant had numerous congenital anomalies and another had a large tumor of the roof of the mouth. The third baby had a hemorrhage from the liver.

Only ten (7 per cent) of the premature infants died after the end of the second day of life. Of this number five expired before the tenth day during that period when the feedings are

TABLE I. PREMATURE MORTALITY

Length of Life	Number	Per Cent	Average Birth Weight
Less than 1 hour.....	12 } 37	8.6 } 27	960 grams
From 1 hour to 16 hours.....	19 }	14.0 }	1,158 grams
From 16 hours to 48 hours.....	6 }	4.4 }	1,372 grams
From 48 hours to 10 days.....	5 } 10	3.5 } 7	1,915 grams
More than 10 days.....	5 }	3.5 }	2,033 grams

TABLE II. CAUSES OF DEATH
(Infants dying after 48 hours)

Case No.	Birth Weight	Days of Life	Clinical and Pathological Findings
G-1	2,490 grams	4	
L-2	1,000 grams	5	
C-3	2,100 grams	10	Bronchopneumonia and middle ear infection
C-4	1,700 grams	10	Marked diarrhea and respiratory infection
H-5	2,280 grams	10	Marked diarrhea and middle ear infection
D-6	2,200 grams	14	Diarrhea and respiratory infection
M-7	1,425 grams	14	Diarrhea and respiratory infection
D-8	2,075 grams	19	Bronchopneumonia and middle ear infection
C-9	2,170 grams	22	Erysipelas
D-10	2,300 grams	31	Erysipelas

gradually being increased to meet the caloric requirements. Three of these infants had respiratory infections with marked diarrhea and bronchopneumonia as terminal manifestations. The cause of death in the other two babies was not determined although a thorough study was made. No evidence of infection was found.

Five infants died after the tenth day of life, three from respiratory infections and two from erysipelas. While intracranial hemorrhage was quite frequently the cause of death during the first few days of life, an infection of the respiratory tract was the most common cause later. Although very few of our premature infants had respiratory infections, the mortality was rather high on account of poor resistance (Tables I and II).

Ninety-two premature babies completed satisfactorily their stay in the hospital. They were discharged in good condition soon after their weight was more than 2,500 grams. The average length of hospital stay was fifty-nine days for those weighing 1,500 grams or less at birth, forty-four days for those weighing between 1,500 and 2,000 grams, and twenty-three days for those weighing over 2,000 grams. The excellent results

obtained with all these babies we feel depended not only upon a thorough understanding of the factors concerned in care of the premature infant but also upon the order of their significance.

NURSING CARE

Intelligent nursing care was considered to be first in importance. We have had during the past year very good coöperation on the part of our nursing staff. Many physicians do not realize that a well trained nurse can do more good for the premature baby than many of their orders. The nurse in charge must know how to weigh, bathe and clothe the infant with the least amount of exposure and disturbance. She must understand how to regulate the temperature of the incubator so that the baby's temperature remains within the proper range. The nurse must know how to feed the infant. She must observe what method of feeding gives the best results. The physician can suggest the different methods to be used but it is the duty of the nurse to indicate which one fits the premature baby the best. It must be remembered that the infant should not become fatigued while being fed. There should be very little regurgitation.

BODY TEMPERATURE

The maintenance of proper body temperature from the moment of birth was given second consideration. Preparations were made before

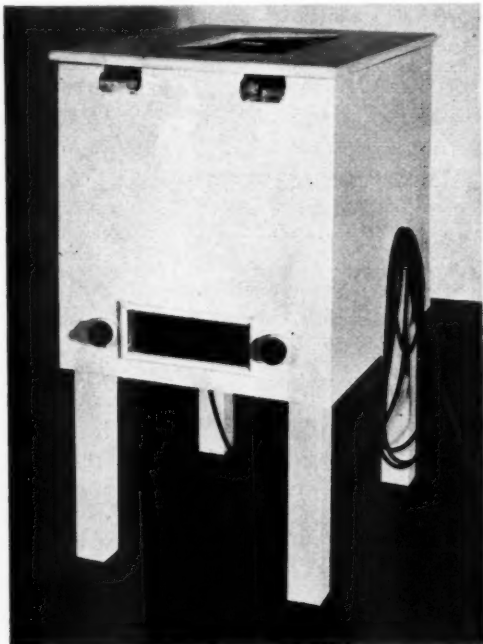


Fig. 1. Premature incubator with the cover lowered.

the baby was born. We always requested that a newborn bassinet be heated to a temperature of 96° F. and that an unopened pack containing sterile cotton batting be kept in readiness. As soon as possible after birth, the infant was placed in the warm bassinet and wrapped in the sterile cotton. A soft absorbent towel was folded and placed at the buttock to catch meconium and urine. In order to reduce the time of exposure the cord could be clamped and cut and then tied later after the premature baby had been in the bassinet for a short time. The temperature of the bassinet was kept at that point where it would hold the infant's temperature between 99° and 100°F. Often the temperature could be dropped from 96° F. to a point between 80° to 86° F. and this was sufficient to keep the baby's temperature at the proper level. A body temperature of less than 98.5° F. for a considerable length of time we considered more hazardous than a temperature over 100° F. All infants were re-

quired to maintain a normal body temperature without the addition of external heat before they were permitted to go home.

A very simple and rather inexpensive incubator was used (Figures 1 and 2). It consists of a white enamel wooden box, supported on four legs with roller casters. The box is twenty-seven inches long, twenty inches wide, and twenty-two inches deep. There are six small electric light bulbs at the bottom and a regular size newborn bassinet is suspended from the top. The light bulbs heat the air coming in through a vent in the lower part of the front of the box, and the heated air then passes upward against the bassinet, around the sides, and out of the top of the incubator. A cover with an opening fifteen inches long and nine inches wide can be lowered over the bassinet, to retain some of the heat. Very little difficulty was encountered in keeping the premature infants warm with this type of incubator, and the position of the baby at the top made it easy to feed and care for it.

The premature ward of the hospital in which the incubators were located was usually kept at a temperature between 78° and 82° F. A direct steam line gave the ward sufficient heat in the winter and assisted in keeping the relative humidity within a proper range. The humidity was held as much as possible between 50 and 60 per cent although during the very warm days of the summer it rose to 80 per cent for a short time.

Resuscitation was carried out in the incubator. It was always essential to remove any obstruction from the upper respiratory tract. Mucus was removed from the mouth and pharynx most effectively by aspiration with a soft rubber ear syringe or a soft rubber catheter attached to a syringe for suction. Great caution was always used in order to prevent damage to the mucous membranes of the mouth and throat. To remove mucus or amniotic fluid from the larynx, trachea, or large bronchi, the infant was held with the head lower than the body and the trachea and larynx were milked toward the mouth. Then suction was again applied to the pharynx.

If the premature infant failed to breathe properly after the removal of the obstructing material from the air passages, violent methods were not used, but instead the administration of oxygen with 5 to 10 per cent CO₂ was started at once.

In some cases the infant size Drinker respirator was tried, but the results were not very satisfactory. If the baby was cyanotic, inhalations of pure oxygen were of great value. A bottle of water with a short tube reaching to the bottom was connected between the tank and the funnel or catheter. The tank valve was regulated so that sixty bubbles a minute passed through the water. The oxygen was administered by means of a funnel or a small size catheter. The latter method was found to be the most satisfactory.

All infants in which an intracranial hemorrhage was suspected or known to exist received warm whole blood. It was injected into the deeper layers of the subcutaneous tissue and into the underlying muscle and was therefore not grouped or matched. The Wassermann test on all the blood used was negative. Usually 20 c.c. were given at one time once or twice a day. Occasionally this was repeated on the next day or two.

PREVENTION OF INFECTIONS

The prevention of respiratory infections and their complications was another important factor in the management of the premature infant. All premature babies should be kept in an environment which should be as clean as possible. In the hospital the infants were isolated. The nurses taking care of the babies did not have any other duties in the hospital. They kept a complete record of the condition of each infant. The temperature of the baby, the temperature of the bassinet, the weight of the infant, the amount of food given and regurgitated, the caloric intake, the fluid intake, and the number and nature of the stools were all recorded on a special chart. In this way the progress of the premature baby could be watched without entering the room each day to examine the infant. No one was permitted in the premature ward unless it was absolutely essential. A physician or a nurse was not allowed to enter unless a clean gown was worn and a mask was used to cover both mouth and nose. Any nurse developing an upper respiratory infection was dismissed at once from the premature service, no matter how slight her infection. Occasionally, in spite of all precautions, a baby did develop an infection with a moderately elevated temperature, a slight nasal discharge, marked diarrhea, and abdominal disten-

tion. This infant was at once placed in another room called the "septic nursery." Epidemics in the premature ward were often stopped by this procedure.



Fig. 2. Incubator showing position of newborn bassinet.

FLUID INTAKE AND FEEDING

The maintenance of a proper fluid intake and the use of a simple but efficient feeding were placed fourth in importance. It has been stated that the fluid intake for the premature infant should total about one-seventh to one-fifth of the body weight each twenty-four hours. By this is meant both the water and the milk given to the baby. The small gastric capacity and the low digestive capacity make the administration of water and the feeding of the premature infant a rather difficult problem. We have tried to supply the baby with a sufficient amount of fluid as soon as possible. Often therefore it was found highly desirable to give on the second and third

days of life 75 to 100 c.c. of sterile Hartmann's solution. This preparation contains sodium lactate, sodium chloride, potassium chloride and calcium chloride. It was given subcutaneously with the least amount of disturbance.

As far as the feeding was concerned, no attempt was made to reach the caloric requirements too rapidly during the first week of life. No gain in weight was expected. Over-feeding with its resulting long-continued feeding problems was thereby avoided. Boiled human milk was the food of choice but if it was not available a cow's milk formula was substituted. For the past year only one formula has been used. It consists of equal parts of unsweetened evaporated milk and water with the addition of three per cent dextrimaltose No. 1. This formula gave excellent results and was used interchangeably with the boiled human milk with no unsatisfactory outcome. In some instances the premature infants were started on human milk, changed to evaporated milk formula, and returned to human milk without any significant change in the weight curve.

The administration of the water and the feeding of the baby was simplified by the separation of the infants into three groups according to weight. The first group comprised the premature babies weighing 1,500 grams and less at birth, the second group those weighing between 1,500 and 2,000 grams, and the third group the infants weighing over 2,000 grams. With this division into three groups, a schedule which required that the babies of each group were to receive definite amounts of water and milk was prepared. On account of the fact that the statement has been made that no set rules may be laid down as to the volume of food which the premature infant of a given weight may be expected to take at a feeding, it was planned not to adhere too closely to the schedule, but it was found that only in a few instances was any modification necessary.

No water or milk was given to the babies for sixteen hours after birth. This was considered the rest period. It permitted the premature infant to become adjusted to the new environment. It allowed the physician and nurse to watch the baby for unfavorable signs such as irregular breathing, cyanosis, pallor, convulsions, and hemorrhage. Following the rest period the infant

weighing less than 1,500 grams received 10 c.c. of sterile water every two hours for four times. This completed the first day of life for the baby. On the second day the water was given every four hours and starting with 10 c.c. it was increased 2 c.c. with each administration. This was continued until 45 c.c. were given at a time. Then the water was decreased 1 c.c. each time it was offered until 30 c.c. were given. This reduction in water was made because the milk was gradually being increased. Milk was started on the second day beginning with 5 c.c. every four hours and increasing 1 c.c. with each feeding until 45 c.c. were given. If the baby regurgitated, no increase was made in the feedings until improvement took place. Interruption of the schedule did, however, occur in only a few cases. After the infant was taking 45 c.c. of milk satisfactorily at each feeding, further increases in the amount were ordered as necessary.

For the premature baby weighing between 1,500 and 2,000 grams, the sterile water was started and increased in the same way as for the smaller infant weighing less than 1,500 grams. An attempt was made, however, to continue to increase the water with each administration 2 c.c. until a total of 60 c.c. were being taken by the infant. Then it was reduced 2 c.c. each time to 30 c.c. The milk was started on the second day and increased 1 c.c. with each feeding until 60 c.c. were reached.

For the premature infant weighing 2,000 grams or more 15 c.c. of sterile water were ordered and given four times the first day. Beginning the second day, this was increased 2 c.c. with each administration until 60 c.c. were reached. The milk was started on the second day at 15 c.c. and increased 1 c.c. each feeding until 45 c.c. were being given. At this time the usual procedure was to decrease the water to 30 c.c. and increase the milk to 60 c.c. Additional changes were made as indicated. Our best test of an adequate amount of feeding was a steady gain in weight. We considered it, however, inadvisable to make daily weighings as this involved too much exposure. Our infants were weighed usually every two or three days.

The premature babies received the water every four hours and the milk two hours later every four hours. Two feeding schedules were followed, some infants doing better on one than

on the other. One schedule called for five water and five milk feedings, and the other five water and six milk feedings. The former schedule permitted the babies to have more rest but the latter schedule was often necessary when they did not remain quiet and appeared to want more food. This was especially true of the larger infants.

Feeding with a catheter was the most common method of administration of the water and the milk. All babies below 2,000 grams were fed by this method at once. A number 10 or 12 soft French catheter was used. The nurse was instructed not to pass it beyond a mark about 4 inches from the tip. The water or milk was permitted to flow into the stomach very slowly by gravity from a glass tube receptacle held about 8 inches above the mouth. The nurse was ordered to watch very carefully for any signs of regurgitation and when it did occur, the catheter was removed at once, the infant's head and shoulders lowered, and the face turned downwards. Refeeding in fifteen to twenty minutes was permitted.

In some instances feeding with the catheter caused quite a great deal of regurgitation. An ordinary medicine dropper, the tip of which was protected by a short length of narrow rubber tubing, was then tried. Small amounts of water or milk were allowed to flow into the baby's mouth, and, if the fluid was swallowed rapidly enough, the method proved satisfactory. Frequently, however, the infant only swallowed a small portion of the milk, permitting the remainder to accumulate in the pharynx with the danger of sudden aspiration pneumonia. The babies that did take the proper amount of water and milk by this method often consumed so much time in doing it that they received very little rest between feedings.

The Breck feeder, which consists of a glass receptacle with a small nipple at one end and a rubber bulb at the other, was found to be of value in some cases. The nurse by gently pressing on the bulb assisted the infant in obtaining in a rather short time all the milk through the nipple from the glass receptacle. When the Breck feeder was not used, a one ounce bottle with a very small nipple (transparent seamless teat of Ingrams, London) was tried with success. Later a larger bottle and nipple could be substituted with no difficulty. As has been stated above, the

nurse often could find out just what method of feeding gave the best results.

The premature infants were furnished with an adequate supply of the essential vitamins as soon as they were adjusted to their feedings. This was usually about the end of the second week of life, at which time all the babies weighing less than 2,000 grams were given five drops of viosterol each day. This was increased so that in many instances the infant received ten drops twice a day. Orange juice was also given, starting with 5 c.c. once a day and then changing later to 5 c.c. twice a day. The premature babies weighing more than 2,000 grams received cod liver oil of high vitamin D potency. One half teaspoonful was given at first once a day and then it was gradually increased so that the infant finally received one teaspoonful twice a day. The cod liver oil was added to the milk if the infant was fed by the catheter method, but it was given separately if the feedings were obtained from the bottle. The larger babies received 10 c.c. of orange juice each day and this was often increased to 10 c.c. twice a day. Yeast in the form of powdered brewer's yeast was not used routinely because it was our experience that it tended to cause frequent bowel movements and some distention.

Gastro-intestinal disturbances were given immediate attention. Regurgitation and vomiting demanded that there be no further increase in the feedings. In some cases the milk was concentrated by boiling and a smaller amount given each feeding. Diarrhea (frequent, watery stools) was dreaded a great deal. It occurred with and without any definite evidence of a parenteral infection. Nevertheless, the fluid intake was immediately increased by injecting Hartmann's solution subcutaneously. One-half strength Hartmann's solution or weak tea was given in place of the plain water by mouth. To the human milk one to three per cent casein (calcium caseinate) or dryco (powdered milk) was added, and from the evaporated milk formula, the dextrimaltose was dropped temporarily. If no improvement took place in twenty-four hours, whole blood was administered intramuscularly and the Hartmann's solution was again given subcutaneously. In many instances the response to this immediate treatment was very gratifying. Only the infants

with quite marked respiratory infections did poorly.

Occasionally after the diarrhea had cleared up, the premature baby appeared to be rather pale, and failed to gain in weight in spite of an adequate food supply. The hemoglobin was usually low and the injection of more whole blood subcutaneously (deep in the subcutaneous tissue) and intramuscularly assisted in raising the hemoglobin and in initiating a gain in weight. At the same time iron and copper were started. The infant received each day 2 c.c. of a 10 per cent solution of ferri et ammonii citras for each kilogram of body weight, and 1 c.c. of a 0.5 per cent solution of cupri sulphas. Both preparations were placed in the milk. The copper was usually discontinued after ten days of administration. Anemia was in general not a prominent clinical finding in our group of babies during their stay in the hospital and routine hemoglobin estimations were not made.

As soon as the premature infant's weight approached 2,500 grams, preparations were made to send the baby home. The mother who had retained her milk supply by regular expression of the breasts was asked to come to the hospital to nurse her baby. The mothers of the artificial fed infants were shown how to feed and prepare the formula. Instructions were also given concerning the administration of the viosterol or cod liver oil and the orange juice. If the baby continued to take an adequate amount of food from the breast or from the bottle and showed a steady gain in weight, no regurgitation and normal stools, he was transferred home. Here preparations had been previously made for the arrival

of the infant by the social service department of the hospital and the Infant Welfare Society of Minneapolis. Our experiences with the follow-up of the babies after discharge from the hospital will be recorded in another publication.

SUMMARY AND CONCLUSIONS

Our experience with care of the premature has indicated that there are certain basic principles to be followed:

1. Careful and intelligent nursing is essential.
2. Normal body temperature should be maintained from the moment of birth.
3. Infections, especially those of the respiratory tract, must be prevented.
4. A proper fluid intake should be maintained, and the diet should be simple but still adequate enough to supply the caloric needs without causing gastro-intestinal disturbances.

To the above may be added:

1. Resuscitation must be intelligently performed and no violent methods are permissible.
2. The nurse should sometimes be allowed to indicate which method of feeding may give the best results.
3. The premature infant must be furnished quite early with an adequate supply of the vitamins, especially vitamin D.
4. Injections of whole blood subcutaneously and intramuscularly are indicated when intracranial hemorrhage is suspected or known to exist, when there is a gastro-intestinal upset or a secondary anemia with or without evidence of infection, and when there is a failure to gain in weight in spite of an adequate food supply.

PAROXYSMAL TACHYCARDIA AND RELATED STATES*

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THE development of a new therapy always clarifies disease, helps to designate entities and blocks out overlapping and borderline conditions, both clinical and pathological. As an illustration, transference therapy for so-called primary anemias (Minot, Murphy, Castle, Damo-

shek, Roger Morris and others) has given a flood of light in terms of the physiologic complementary activities of the gastrointestinal tract on the one hand and the bone marrow on the other. There can be little doubt that we are on the verge of a development in direct bone marrow stimulants (Vitamin B² of Roger Morris or some modification of pentose nucleotide of Jackson and

*From the Duluth Clinic. Read before the Minnesota Heart Society in connection with the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 22, 1933.

confreres) which will influence profoundly bodily adjustments involving hematopoiesis.

Therefore, it is not unwise in approaching an analysis of periodic fast hearts to begin with quinine derivatives and see what their exhibition has taught us in terms of physiological perversions of the heart that have often been a great annoyance to both patient and doctor. The former has had little understanding from his doctor and the latter has fumbled around for explanations that rarely satisfied. Quinidine is likely not as popular presently as five years ago, particularly in the matter of the conversion to normal rhythm of cases of auricular fibrillation. This is due, of course, to the fact that the underlying organic pathology remains, and the prognosis is essentially unaltered in advanced rheumatic valvular disease or following the extensions of cardiovascular, coronary, or hypertensive disease. When, for example, a surgically remediable hyperthyroidism is in the background, the quinidine reversion to normal rhythm has an ideal exemplification.

We may proceed, therefore, to an analysis of functional disturbances of irritability and quinidine's propensity to prolong the refractory period of the heart, and find not only pleasing therapeutic responses but a means of coming to a fairer appreciation of troublesome breaks in cardiac rhythms that while offering essentially excellent prognoses invite great error in the immediate approach of the clinician or surgeon who is not "tuned in," as it were, to the possibilities. As an example: a well trained technical surgeon removed a diseased gallbladder. Three hours later the patient was found in what was believed to be profound shock: pulse small and even and a heart so rapid as to make counting of beats very difficult. After racing for three or four hours the tachycardia stopped as suddenly as it started. In the meantime, a good deal of footless anti-shock measures were taken, and, in fact, were continued when similar paroxysmal bursts of tachycardia supervened. Vomiting, that might have been limited by water balance or gastric decompression technic, continued, and in a short time an extrusion of viscera occurred; then an attempt at resuturing yielded a jejunal fistula and later years of invalidism. This man was later kept in equilibrium for three years with quinidine. It would seem fair to assume that had this entity been considered or a preoperative all in-

clusive study (anamnesis) been made, preventive therapy and less panic might have supervened, with greater credit to surgery in general. An adipose, menopausal woman of fifty-four has now been comfortable after quinidine therapy for four years after a harrowing exploit with "ptomaine poisoning." Soon after a bout with mushrooms she was rushed to a hospital and all hollow viscera that were approachable evacuated—gastric lavage, catharsis, diuresis. No one else in the family fell ill. She readily recalled having similar tachycardia spells before, but "shorter in duration." These experiences might be multiplied.

Other methods of treatment naturally include vagal pressure in the region of the carotid sinus, the Valsalva experiment, and drugs like physostigmin and pilocarpin on one hand or strophanthus or digitalis (intravenous usually) on the other. However, these and topical physiotherapy have largely yielded to the more gratifying use of quinidine sulphate or soluble quinine salts intravenously.

Thus, having established quinidine sulphate as a sovereign remedy in the prevention of classical paroxysmal tachycardia permit me to:

1. Leave out entirely an electrocardiographic evaluation of the source (auricular, ventricular, etc.) in the heart with the altered rhythms. Those who work with electrocardiographs would gain nothing by listening to me; those who do not are rarely handicapped by the lack
2. Mention the very common borderline group of tachycardias and their clinical features.
3. Make brief mention of the physiologic background, since within this field we gain the greatest light on the immediate problems and hope of improved therapy: a fertile field for surgeons especially to cultivate.

Regarding the normal sinus arrhythmia of youth with the persistent lability of pulse and the heart in neurocirculatory asthenia, the respiratory influence is dominant in the former, and fatigue, infection and excitement in the latter. The background of the thyroid influence is decided when real but admits of gross distortion in the hands of a surgeon who "accepts all high basal rates when present and negatives them when absent." The patient and science "get it in the neck."

Quinidine can be used in doubtful borderline goiter influence to help the clinician to make up

his mind. Paroxysmal tachycardia, bursts of premature contractions, even flutter or fibrillation, may be helped temporarily but not for long where true hyperthyroidism exists, i.e., preoperative. Conversely, Lugol's solution yields even better immediate influence on rhythms but its benefit is also temporary. Varying both remedies back and forth, the while basal readings are sought, is peculiarly advantageous where questionable routine or substernal adenomata are under surveillance.

There remains a large and elusive group of inadequately poised folk who have various degrees of flights of tachycardia—not so decisive as to onset and abrupt termination as the textbook variety. Not a few of these react well to quinine, with the usual symptomatic adjuvants: barbitol, adequate diet, weight upbuilding, limiting of social loads and, of course, an exhibition of the psycho-therapeutic touch—the subtlest of the arts!

Finally, as to the physiology involved, surgeons particularly are prone to incriminate the heart and load upon it the iniquity of a rising pulse rate, on and off into fatality, all based upon the totally erroneous assumption that the tachycardia involved is due to some primary fault within the heart muscle itself. Illustrations again suffice for argument.

The body's circulatory needs are proportioned by the oxygen and energy-yielding pabulum requirements of its cells. The minute volume output of the heart and its relation to the oxygen consumed and CO_2 produced is one of the most fundamental of bodily adjustments (Haggard and Henderson).

The minute volume output and the cardiac systolic emptying are primarily dependent upon sufficient diastolic filling and adequate return of venous blood to the ventricles from the great veins.

An increase in the heart rate is always secured at the expense of diastole. Anrep's thesis that the coronary suffusion of the heart occurs mainly in diastole, plus a short interval at the beginning of systole, is very illuminating, and has decisive clinical connotations. Exophthalmic goiter and paroxysmal tachycardia (Levine-Willius) can produce angina pectoris quite indistinguishable from the true Heberden type for obvious reasons—an overexpenditure of energy in the heart spurred on by a situation the equivalent of

forced exercise. Pernicious anemia and insulin reactions have copied the same results for slightly altered reasons: inadequate oxygen-carrying capacity of erythropenia and too abrupt withdrawal of the glycogen available for the heart muscle fibers. In fact, in certain coronary-damaged hypertensives hyperglycemia may be compensatory.

The minute volume output is only moderately increased by heart rates up to 90 to 110; when 160-80 is attained the output markedly drops. Such is the importance of diastole venous return and a study of various situations that may suddenly supervene to give a false impression that we deal with heart failure despite the fact that with cyanosis and pallor the ever questioned "cardiac dilatation" is suspected. Dependence is placed upon drugs like digitalis, caffeine, camphor, adrenalin, not to mention strychnine and whisky. Quinidine is a specific for angina occurring in spells of paroxysmal tachycardia.

One of the most dramatic of the states which I have seen where the tachycardia is obvious, has been the status (usually post-operative) of massive atelectasis of the lungs, and the conditions accompanying shock which Zwingle and Pfeiffer and others of the Princeton school attribute to suprarenal cortex inertia and an inability of the organism to maintain circulatory blood volume by prompt and easy dilution from non-circulating serum. Thus, they say that eschatin by hypodermic promptly restores blood volume and with it diuresis and checking of azotemia. The rôle of all excessive hemorrhage is readily sensed, as well as the advantage of transfusions of blood and the large molecule gum arabic solutions.

A neat confirmatory observation has come to hand from Walters of the Mayo Clinic, who found, after a bile leakage to the right subdiaphragmatic space, a presumed torsion of the cava inferior, with a burst of tachycardia, that responded at once to the bile evacuation. Then, dog experiments were made with a blowup rubber glove introduced into a like position: torsion would repeatedly incite the same sequence. It may be recalled in this connection that the diaphragm has been called "the second most important muscle in the body." Its function as a circulatory pump to create a chest vacuum and unload the liver (laden with blood) has not been

appreciated. Clinical medicine eagerly awaits easier and more definite means of registering venous pressures. Standards must be set not only for normal but pathologically damaged hearts. These latter must suffice for the enormous percentage responses in stroke volume and energy output required from repose to forced athleticism. The heart is not an especially efficient

pump—said to be at best but 25 per cent. Please remember that infections like pneumonia and operations like cholecystectomy may impose upon a heart a handicap (aside from infection) as great as extreme exertion. Thus, I have reversed the usual process: I have begun with dogmatic empiricism and finished with philosophical exhortation.

PSYCHONEUROSES*

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THESE lean years, with their trials, failures and discouragements have taxed the stamina of everyone, and, like all conditions which cause prolonged emotional stress, have produced an abundance of nervous disturbances in many people.

What has been the nature of these disturbances? Although there is a certain amount of contagious mimicry at play, the character of the emotional experience seems to influence, to some extent, the symptoms which neurotics display. For instance, fear is linked in the minds of most people with trembling. We speak of fear and trembling, and we also speak of being paralyzed with fear. Therefore the predisposed neurotic, subjected to prolonged fear, might conceivably develop tremors and paralysis. Such gross psychoneurotic symptoms were frequently encountered in the years 1916 to 1920, and among the soldiers were dignified by the name shell shock. These dramatic and interesting hysterical manifestations have almost disappeared, and in their place we see the gloomy, apprehensive countenance of the victim of financial distress.

Shell shock has gone, but we have the depression dumps.

In many respects, the present-day psychoneuroses are more difficult to deal with than those which preceded them. The instability of business and the uncertainty of jobs result in prolonged anxiety which creates the present day emotional stress. If, as the result of the failure of his business, or repeated cuts in income, or

the loss of his position, a man develops a psychoneurosis, he, in addition to the problem of maintaining himself, sufficiently disturbing in itself, must also combat an harassing sense of defeat or failure, for a very real part of these nervous disturbances are the feelings of inferiority, the sense of defeat, the loss of assurance and self-confidence.

The symptoms which psychoneurotics show vary to some extent with the individual, but a common inciting cause leads to a certain similarity. At present many of them are gloomy and depressed. Many of them are anxious and apprehensive and display an aimless energetic restlessness. Anxiety states are frequently seen. Among the conversion hysterics the physical symptoms seem to be in keeping with the worried state of mind which is so common today. Tachycardia, extrasystoles, precordial oppression, loss of appetite, nervous indigestion, nausea, diarrhea and psychic impotence seemed to have occurred frequently in the last year.

From what has been said, it might be inferred that the symptoms of the neurotic are the result of a suggestable state of mind; that the neurotic is merely a victim of his imagination and not really sick. Quite the opposite is true. Any person so affected is definitely sick and his suggestability is due to his sickness, and no matter how irritating he is, or how much he tries the patience of the physician, he should be thought of as being ill, and given proper care. To do this intelligently, we must not only know something of the dynamics producing the neurosis but we must also study the problems and character of the patient. Of course, the first step to this end is to recognize the type of the disorder.

*Read before the Society of Neurology and Psychology in conjunction with the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, May 22, 1933.

The neuroses are to be distinguished from the psychoneuroses.

The actual neuroses are:

- Anxiety neuroses
- Neurasthenia
- Hypochondria
- Traumatic neuroses.

The psychoneuroses are:

1. Hysteria
 - a. Conversion hysteria
 - b. Anxiety hysteria
2. Compulsion neuroses (obsessions).

The distinction which is drawn between the neuroses and the psychoneuroses according to psychoanalytic doctrine is this: The neuroses have a physical basis, while the psychoneuroses are entirely confined to the mind. The actual neuroses are characterized by real changes or disturbances in the physical aspect or physiological functions of the organs of the body. In the psychoneurosis there is no such change; it is a purely psychic condition.

The psychoanalytic concept of the psychoneurosis may be summarized thus:

1. When an adult meets an environmental obstacle (such as the financial difficulties of today) which he cannot surmount, and when he cannot find it within himself to pardon his failure to surmount it, he withdraws his thoughts from the realities of the world and begins to live in a "make-believe world" of his own building.

2. In this "make-believe world" or phantasy his thoughts move backwards to some period preceding the one in which he encountered the obstacle, usually back into infancy, in which state he remembers no trials, and the expression of a wish brought about its fulfillment.

3. The psychoneurosis is considered a repetition of infantile situations. Whether these situations are recalled because they are pleasant, whether they are dwelt upon because at that period there was an especial love for some particular member of the family, or whether there was some incident of a real or imagined traumatic character which dammed up the love interest at that point, seems to be something about which opinions differ, but it is generally conceded that the seat of the pathological process is in the love interest of the affected person; that it is in the sexual sphere. The backward moving phantasy of the neurotic is always toward an

early phase of some mental aspect of his love life.

With this brief classification of the psychoneuroses and this sketch of the theory of their development it may be further said that the principal difference between the actual neurosis and the psychoneurosis lies in the fact that in the neurosis there is little or no tendency to develop the reminiscent phantasy, while this phantasy is the gist of the psychoneurosis. However, it is not the purpose of this paper to theorize as to the production of these conditions. It is far more pertinent and practical to discuss the application of some of the helpful features of psychoanalytical technic which may be usefully applied by anyone interested. Ideally of course the psychoneuroses are best handled by a psychoanalyst. As this is not always possible the following are some useful hints gleaned from their method of management.

One extremely important factor in handling neurotic patients is to make them like you. If this can be managed, it immediately offers you an immense aid in your task. For it is then easier for them to confide their conscious difficulties to you, and thereby get rid of some of their pent up emotion. If they like you it makes them want to carry out whatever changes in habit of thought and manner of living you may think important. Because of your liking for him, and personal interest in him, the patient feels under a friendly obligation to obey your orders, for fear of losing your respect, interest or good opinion.

It is not possible to describe how to make the patient like you, but some negative suggestions may prevent any serious faults in the attitude of the physician.

It is important not to preach or to moralize and generally it is of no avail to tell them what you consider to be the cause of their difficulties. You should not nag, find fault, belittle or poke fun at their trouble. It is usually better to hint at any changes thought necessary, rather than to give specific directions. Care should be taken not to confuse the patient by giving him too many suggestions. One thing seen clearly is worth more to him than a host of things not clearly perceived. The physician should be on the alert to recognize and encourage every successful effort of the patient to do what has been suggested.

Supposing that the physician has succeeded in establishing friendly relations between himself and the patient, and that the patient has confided his conscious difficulties to him, is that enough? No, for that is a mere beginning. It is common knowledge that anyone may know the things and circumstances that are making him nervous, but this does not help the nervousness or help the mental state which accompanies it. Knowing the cause does not effect a cure. For this, it is necessary to bring about certain changes in his habits of thought, outlook on life, manner of living and love life.

In using the psychoanalytic technic in order to accomplish these changes it is necessary that the patient resume his habitual phantasy, which he will invariably do, if his mind is permitted to idle. The psychoanalyst gives the patient the opportunity to do this in the course of his treatment, in order that he may gain insight into the patient's unconscious difficulties, and the faulty methods used by him in his efforts to overcome them. Moreover, the suggestable state of mind of the patient makes it possible to convince him more forcibly that he has divulged certain things to the physician which call for changes in view point, and the substitution of good habits for bad ones.

It is possible, however, with some neurotic patients to accomplish the same result by persuading them to try the change. If the change gives them relief, they are convinced of its value. For example, most neurotics are introspective. Their interests are narrow, and they shun social intercourse. They shun their friends not only because their interest is concentrated in themselves, but also because they are conscious of being peculiar and fear that their friends will notice it. If their reluctance can be overcome, and they can be persuaded to meet their friends, with pleasant results, this agreeable experience exerts a reassuring effect upon their apprehension. They can probably be persuaded to repeat it, and eventually normal social interest is re-established, and the habit of introspection diminishes.

Many psychoneurotics complain of physical symptoms which in some cases seem real enough to demand treatment, but since one of the characteristics which we wish to combat in these people is their tendency to look upon themselves

as invalids, undue emphasis should not be placed upon any physical symptoms they may exhibit, nor upon measures designed to relieve these symptoms. The emphasis should be placed upon the necessity for change in mental outlook. Their invalidism frequently includes some derangement of their sexual functions, and it is often advisable to adjust their outlook in this respect.

This is a task which requires understanding and tact, and of course this is the phase of analytical work which has caused so much unfavorable criticism.

In the minds of many physicians this delving into the sexual sphere may seem obnoxious as well as purposeless. Therefore, it may be well to point out how the sexual phase of the condition is connected with the production of symptoms, for example, in the anxiety neurosis which clinically and in its mental symptoms is very closely akin to anxiety hysteria.

The disturbance is characterized by periods of intense apprehension, fear and anxiety from no apparent cause. These may come on at any time of the day or night, they may waken the patient from sleep, and be accompanied by a fast heart rate, sweating, nausea, diarrhea, dizziness and various other signs of panic and shock. They are described by the patient as intense fear of an impending calamity, fear of death, fear of losing his mind, or various other catastrophes. Actually such attacks of anxiety may be due to a long continued excitation of the sexual impulse without normal gratification, or they may be due to enforced or voluntary restraint which is poorly sustained by the individual.

Anxiety states have been described by Freud as occurring in widowhood, among young married women who fear pregnancy and consequently have all gratification thwarted; in women whose husbands are feeble sexually; in young virgins, and in women who are frigid or anesthetic. In men anxiety may arise from undue erotic stimulation, from long courtships without satisfaction or from prolonged abstinence which they are unable to tolerate.

The above instances of some of the sexual derangements which cause anxiety states are mentioned because the cause and effect seem to be so direct. Whenever it is possible to adjust the sexual difficulty without transgressing the social code, the symptom of anxiety disappears.

The importance of adjusting sexual matters should therefore be apparent, however unpleasant the task may seem to the physician.

At the beginning of the paper we referred to the sense of failure, lack of assurance and loss of aggressiveness and courage, now so prevalent. These states of mind are often met with as the accompaniment of a nervous disturbance, the

psychoneurosis. As they are an integral part of the nervous state, no special effort should be put forth to deal with them, directly, for as the nervous condition is cured, a more vigorous and healthy attitude toward the problems of life is resumed.

And this paper has been an attempt to indicate briefly a plan for effecting this cure.

CASE REPORTS

CONGENITAL ANOMALY OF KIDNEY, URETER AND BLADDER*

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Congenital anomalies of the urinary tract are more common among children than among adults. This is due to the fact that many of these anomalies tend to shorten life. Adequate articles on the subject have been written by Bigler and by Hurt. Bruce recently reported a case of anomalous hydro-ureter and gave references. Some other, equally valuable, articles are not mentioned here because they easily can be found by following through the leads given by the authors just named.

Other data that cannot be found in the manner mentioned will be reviewed briefly. Kass studied reports of postmortem examinations of newly born and stillborn infants as well as another series of reports, excluding newly born and stillborn infants, and considering children to the age of fifteen years (Tables I and II). Rovsing stated that in a third of cases of hydronephrosis of children the condition was congenital. In Epstein's series of thirty-three anomalies found in the course of 1,000 postmortem examinations, double ureters were present in ten cases; in six they were unilateral, and in four bilateral. In five cases the pelvis was double, in three unilateral and in two bilateral. Lanman and Mahoney noted ten cases of double ureter in 234 consecutive cystoscopic examinations of infants and children. Bilateral duplication of the ureters occurred only in one case. Fishberg reported the case of a child aged nine years, who had hypertension and cardiac hypertrophy, hydronephrosis and hydronephrosis due to an obstructing valve in the urethra.

All authors urge thorough urologic examination of children with urinary trouble. Intravenous urography in some cases is an excellent diagnostic aid. Renal and ureteral duplications may be unilateral or bilateral, complete or partial, or a combination of the unilateral types in the same person. The ureteral orifices are generally situated close together, and at approximately the normal site in the trigone. Occasionally, however, they are so placed in the bladder that their discovery may be difficult. Often catheters can be passed into each ureteral orifice, specimens obtained for the usual examination, and functional tests performed for estimation of function of the separate segments of each kidney.

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TABLE I. NEPHROPATHY IN NEWLY BORN AND STILLBORN INFANTS DISCOVERED BY KASS IN REPORTS OF 1,000 CONSECUTIVE POST-MORTEM EXAMINATIONS

Malformation	Cases	Sex	
		Male	Female
Horseshoe kidney	7	5	2
Cystic kidney	11	7	4
One kidney absent	4	2	2
Double pelvis	3		
Unilateral	1		1
Bilateral	2	1	1
Hydronephrosis	9	4	5
Anomalous position	2	1	1
Hypoplasia	2		2
Total	38	20	18

TABLE II. NEPHROPATHY IN CHILDHOOD EXCLUDING THOSE IN TABLE I AND INCLUDING PATIENTS UP TO FIFTEEN YEARS OF AGE, DISCOVERED BY KASS IN REPORTS OF 1,100 CONSECUTIVE POST-MORTEM EXAMINATIONS 1923-1931

Malformation	Cases	Sex	
		Male	Female
Horseshoe kidney	3		3
Cystic kidney	6	4	2
One kidney absent	3		3
Double pelvis	2		2
Unilateral	1		
Bilateral	1		
Hydronephrosis (congenital)	7	4	3
Anomalous position	4	2	2
Hypertrophy	1		1
Total	26	10	16

The embryologic development of urinary anomalies has been reviewed by Helmholtz and Amberg. Wide variations in developmental defects occur in the genitourinary system because of the formation of three successive types of excretory organs, pronephros, meso-

nephros, and metanephros from the nephrogenic cord. Portions of each atrophy and disappear. The metanephros, which arises as a bud from the terminal end of the Wolffian duct, elongates and splits to form the ureter, pelvis and primary and secondary calices as well as the collecting tubules. Premature or exaggerated division causes varying degrees of partial duplication of the pelvis and ureter. Complete duplication of the pelvis and ureter down into the bladder occurs if there is a coincident primary branching at the point of deviation of the renal bud from the Wolffian duct.

Braasch demonstrated that when a double pelvis occurs the lower pelvis is larger and more completely formed. The upper is smaller and rudimentary if the pelvis are distinct. Occasionally, there is a communication between the pelvis. Complete duplication of the pelvis of both kidneys is rare. In complete duplication of the ureters they cross twice before entering the bladder, once below the ureteropelvic juncture and again above the vesical wall. The ureter of the lower pelvis enters the lateral and posterior meatus, while the ureter from the upper pelvis enters the mesial and anterior meatus. It is rare for ureters to fuse on crossing, and more rare for one ureter to cross the bladder.

REPORT OF A CASE

A colored girl, aged four months, was admitted to the hospital September 7, 1931. She was a firstborn, full-term baby, and had been easily delivered. The family history was irrelevant. The infant was breast fed and had had good health except for an attack of diarrhea of three days' duration during the third month of life. Fourteen hours before admission the child became restless and cried at short intervals. Movements of the bowels had been satisfactory the day before, but there had been none on the day of admission. Shortly after breast feeding in the morning, she had vomited a small amount of brownish fluid. Thereafter, the mother thought, the child had become pale and weak.

The child appeared to be in shock. The skin was pale and cold. Respirations were labored but not rapid, and there was an expiratory grunt. Cyanosis was not noted. The temperature was 97° F. The pulse rate was 100 beats a minute. Development and nutritional status were excellent. Two teeth were in early eruption. The abdomen was slightly distended. Tympany was increased. There was no rigidity, and masses were not palpated. Borborygmus was heard. However, the child seemed to give indication that the abdomen was diffusely tender on palpation.

A roentgenogram gave evidence of no abnormality in the thorax, but there was a marked accumulation of gas in the stomach and small bowel.

Urine was not passed until ten hours after admission, when 15 c.c. was obtained by catheterization. It contained a trace of albumin and 20 pus cells. Spinal fluid was under slightly increased pressure. Leukocytes numbered 14,000 in each cubic millimeter of blood; the percentage of polymorphonuclears was 77, of lymphocytes 21, and of monocytes 1.

Laparotomy was performed under general anesthesia on the day of admission. Nothing abnormal was noted. Later, several transfusions of 25 c.c. of whole blood were given. After the operation and catheterization, the urine was passed in fairly large quantities. The following day signs of pulmonary consolidation developed. The temperature rose to 103° F. and the child died September 9.

Necropsy.—The body was 59 cm. in length, and weighed about 12 pounds (5 kg.). There was moderate cyanosis of the lips and fingernails. The right lung weighed 60 gm. There was an irregular consolidation in the posterior portions of the upper and lower lobes. The external and cut surfaces in these regions were dark and mottled, and purulent fluid could be expressed. The left lung weighed 50 gm. It showed

changes similar to those seen in the right lung but of lesser degree.

The kidneys were removed with the ureters and bladder in one piece. The entire specimen weighed 59

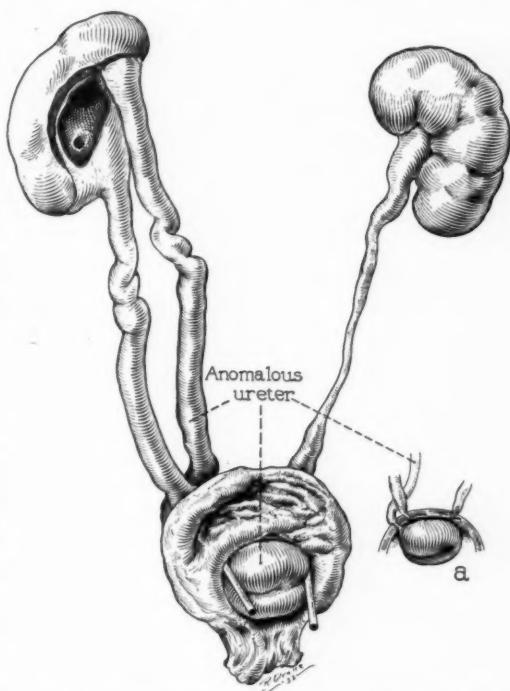


Fig. 1. The superior accessory ureter of the right kidney ends in a blind sac in the region of the trigone where it compresses the orifices of the normal ureters.

gm. (Fig. 1). The right kidney, which weighed 11 gm., was considerably smaller than the left and appeared sac-like. Its wall was thin (2 mm.) and the central part was composed of two pelvises, the largest of which was situated inferiorly. Both of these cavities contained urine but they did not communicate with each other. The ureter issuing from the lower pole was dilated (7 mm.) but had a fairly free opening into the bladder, for urine could be expressed from it. The ureter which arose from the superior portion of the kidney was also distended, and injection of additional fluid and pressure on the ureter failed to reveal an outlet to the bladder. When pressure was exerted, a large, bulbous elevation appeared in the trigone (2 by 2 cm.) which was the blind inferior portion of the superior right ureter. On distention this bulbous elevation was so marked as completely to occlude the orifices of both ureters.

The left ureter was also dilated (7 mm.). Urine could be expressed on pressure. The left kidney weighed 27 gm. Its pelvis, although dilated, was smaller than that of the right kidney. The vesical mucosa was slightly hemorrhagic in its posterior portion. There was no sloughing or trabeculation. Its wall was 5 mm. thick. The urethra was without evidence of stricture. The organs of the head and neck were not examined.

The value for urea nitrogen was 86 mg. in each 100 c.c. of blood at necropsy. Culture of the urine from the pelvis of the left kidney and of that from the right inferior pelvis revealed Gram-positive and Gram-

negative bacilli and diplococci and also streptococci in short chains and staphylococci. Culture of the fluid within the bladder revealed the same organisms as well as staphylococci. The urine in the anomalous ureter and pelvis gave no growth.

SUMMARY

Complete duplication of the right ureter and right renal pelvis with the abnormal ureter ending in the wall of the bladder formed a sac which filled with urine eventually, impinging on the normal ureteral orifices to such an extent that bilateral hydro-ureters and hydronephrosis occurred. Pyelonephritis and renal insufficiency resulted.

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ABDOMINAL ACTINOMYCOSIS

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Abdominal actinomycosis, although not a rare condition, always presents some difficulty in diagnosis. Sanford and Voelker, in 1925, reviewed the authentic cases of actinomycosis in the United States, which numbered 670. Actinomycosis of the abdominal wall and cavity with its viscera made up 18 per cent of the group. They concluded that the disease was one of young adults, although the youngest patient in their series was aged twenty-eight years and had an abscess of the lung, and the oldest was eighty-two years of age with involvement of the thorax. The condition may be acute, subacute, or chronic. The shortest illness lasted one week and the longest fifteen years.

Good in a review of the cases of abdominal actinomycosis seen at the Mayo Clinic found 77.5 per cent to be definitely primary in the appendix and an additional 13 per cent in which the appendix was the most logical primary site of infection. Thus a total of 90 per cent of his cases started in the region of the appendix. He explained this on the basis of stasis in the ileocecal region.

In the Duluth Hospitals there is recorded only one case of appendiceal actinomycosis which was proved by necropsy. There are also two or three clinical cases which are no doubt true conditions of this type. The following case is reported because of the unusual clinical course, lack of external sinuses, absence of cuta-

neous lesions late in the disease and diagnostic confusion.

REPORT OF CASE

A white female, aged eighteen years, was admitted to St. Luke's Hospital April 24, 1933, with the chief complaints of a dull aching pain in the right side of the thorax, cough productive of blood-tinged sputum, loss of weight of 2 or 3 pounds in the last six months, anorexia, and pallor. The pain in the thorax and the productive cough had been present for about five months. The family history was essentially negative. The patient had always lived in the city and there was no history of contact with tuberculosis. The past history revealed a mild attack of inflammatory rheumatism in 1923 and a ruptured appendix in July, 1929. At operation an abscess in the right lower quadrant had been drained. There was slight general peritonitis. The wound healed slowly but completely in about eight weeks after a small abscess adjacent to the wound had been opened. Following this, the patient felt well and had no complaints whatever; she attended school, carried on her usual activities and had required no medical attention. May, 1932, three years after the operation, she consulted a physician because of some undue weakness and pain in the right side of the thorax of short duration. Examination showed evidence of fluid in the right side of the thorax and hemoglobin of 55 per cent. A small amount of clear fluid was aspirated from the chest; inoculation of guinea pigs for tuberculosis proved negative. The patient was given iron and ultraviolet light treatments and made an excellent response to this treatment so that in September she felt well. In December, however, the hemoglobin was 50 per cent again, although the patient felt fairly well. In the latter part of December a cough with bloody sputum began which persisted especially at night.

In January, 1933, the patient was seen by Dr. Laird of Nopeming Sanatorium. The thorax was practically negative on examination, the Mantoux test was negative and the roentgenograms of the thorax showed no evidence of tuberculosis. In March chills, fever, sweats, anorexia and pain in the right side of the thorax began.

Examination on admission to the hospital in April showed a poorly developed, undernourished, pale and anemic girl. Examination of the chest suggested the presence of fluid at the base of the lungs. No râles were heard. The spleen was slightly enlarged and palpable. Shifting dullness was present in the flanks which evidenced free fluid in the peritoneal cavity. Roentgenograms of the thorax showed some parenchymal infiltration in the apex of the left lung and increased density at the base of the right lung which suggested pulmonary tuberculosis.

The laboratory findings showed erythrocytes numbering 3,110,000 and leukocytes 16,200 in each cubic centimeter of blood. The differential count was polymorphonuclears 79 per cent, lymphocytes 20 per cent, and eosinophils 1 per cent. The hemoglobin was 58 per cent (Dare). The sputum was negative for tubercle bacilli on numerous occasions. Urinalysis showed albumin, graded 2, and a few leukocytes to the high power field. Blood culture was negative on two occasions. The blood urea was 20.3 mg. in each 100 c.c. of blood.

Aspiration of the thorax was attempted twice but no fluid was obtained. An abdominal paracentesis was done and 250 c.c. of clear straw colored fluid was removed. The cell count of the fluid was 370 with 70 per cent erythrocytes and 30 per cent leukocytes; no organisms were demonstrated on a smear. The guinea pig inoculation was negative for tuberculosis.

Clinical course and diagnostic suggestions.—The severe secondary anemia, high leukocyte count, sputum negative for tuberculosis and negative Mantoux test were thought by Dr. Laird to rule out tuberculosis.

*From the Arrowhead Clinic.

Polyserositis and lymphoblastoma were suggested early as possible diagnoses, as was abdominal malignancy. Splenic anemia and all splenic-hepatic syndromes were thought to be ruled out because of the septic course.

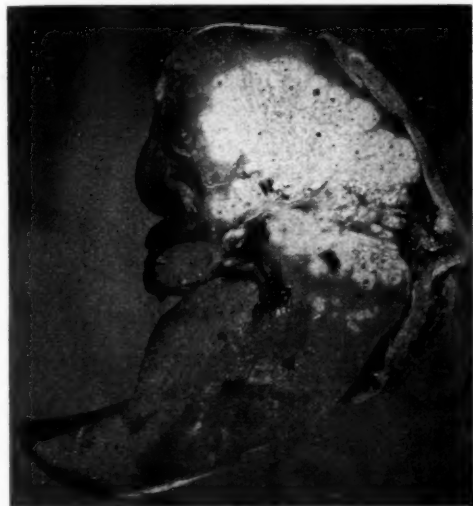


Fig. 1. Large honeycombing actinomycotic abscess in the right lobe of the liver with small abscess in the left lobe.

Roentgenograms of the thorax on May 13 showed no apparent change. The patient's clinical course ran slowly down hill; the abdominal fluid recurred; diuretics and paracentesis were required for relief. Severe chills and fever continued daily throughout the hospital course. In the last two weeks of life generalized muscular twitchings began and terminally severe convulsions occurred, one of which resulted in death August 26, 1933.

The erythrocyte count varied from 3,440,000 to 2,640,000 and the leukocyte count from 17,400 to 10,500 for each cubic centimeter of blood, and the blood sugar from 136 to 120 mg. per 100 c.c. The sputum was cultured and showed only staphylococci. No fungi were demonstrated. The blood calcium was 6 mg. per 100 c.c. during the period of muscular twitchings. All agglutination tests were repeatedly negative for typhoid, melitemia, and tularemia. The sedimentation rate was markedly increased.

Necropsy.—The body was markedly emaciated and showed an old appendiceal scar. There was beginning sacral decubitus and some petechial lesions on the neck and the upper part of the chest. The abdominal cavity contained 2,000 c.c. of yellowish serous fluid. The omentum was adherent to a mass in the right side of the pelvis which included the cecum, right tube and ovary. The heart, which weighed 175 gm., showed nothing of note. The right half of the diaphragm was very adherent to the liver. The lungs contained dense pleural adhesions and no fluid. In the outer parenchyma of the lungs were many small abscesses which measured from 1 mm. to 1.5 cm. in diameter. The abscesses contained a yellowish caseous material. The spleen weighed 390 gm. and contained a small abscess measuring 1 cm. in diameter. The kidneys weighed 300 gm.; the right kidney contained an abscess 3 cm. in diameter at the upper pole and the left kidney a similar abscess 1.3 cm. in diameter. The mass in the right side of the pelvis containing the cecum and right adnexa uteri and omentum was densely adherent. There was a fistulous tract from the appendix into the right

tube, which was blocked at both the uterine and fimbriated ends, and contained small fecal particles. In the dense surrounding tissue were three or four small abscesses about 5 cm. in diameter.

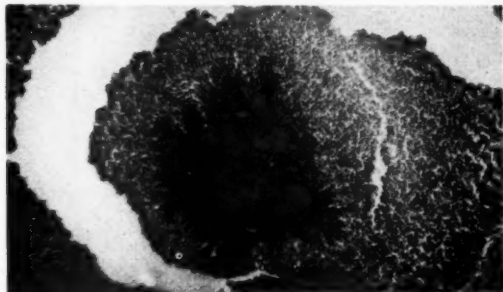


Fig. 2. Section of abscess in the liver showing a typical actinomycotic granule.

The liver on cross section was found to contain a large honeycombing abscess about 9 cm. in diameter, as shown in Figure 1, which filled almost the entire right lobe. The left lobe contained small miliary abscesses. The remaining abdominal viscera showed nothing of note.

The gross pathologic diagnosis was: (1) primary actinomycosis of the appendix with metastatic abscesses in the liver, spleen, lungs and kidneys (the brain was not examined); (2) splenomegaly; (3) hydroperitoneum; (4) omental and peritoneal adhesions of the appendix, cecum and right adnexa with fistulous tract into the right salpinx; (5) pleural adhesions, and (6) emaciation. A fresh smear of the pus from the hepatic abscess showed actinomycotic granules. Microscopic section of the abscess in the liver (Fig. 2) showed a typical actinomycotic granule.

SUMMARY

This case is of unusual interest because of the absence of fistulous tracts in the appendiceal area, the three years of apparent good health after surgical treatment, the absence of terminal cutaneous manifestations and the failure to diagnose the condition before necropsy.

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MASSIVE COLLAPSE AND POSTOPERATIVE ATELECTASIS*

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THE term "massive collapse" was chosen by Pasteur to denote extensive pulmonary atelectasis, and he is accredited with the first clinical recognition and description of the findings in this condition. However, as far back as 1829, Louis noted areas of airless pulmonary tissue in the lungs of children dying from typhoid fever, and to this condition he applied the name "carnification." In 1832 Jörg observed incomplete pulmonary aeration in newborn infants persisting from

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fetal life, and referred to this condition as "atelectasis." In 1890 Pasteur published his observations on various degrees of pulmonary collapse, the result of diaphragmatic paralysis associated with diphtheria. From that date and until 1914 he wrote rather extensively on the condition occurring as a sequela of various diseases,

all cases of massive collapse. The following case is reported because the series of roentgenograms portrays very well the succession of events that occur during the presence of and following the removal of the bronchial obstruction in a case of postoperative massive collapse.

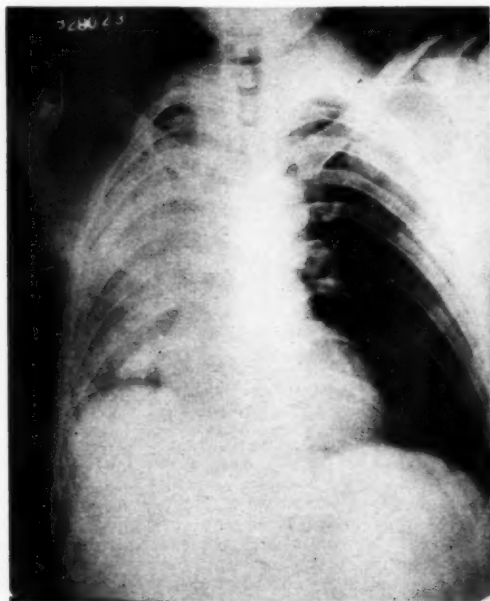


Fig. 1. March 14, 1933. Massive collapse.

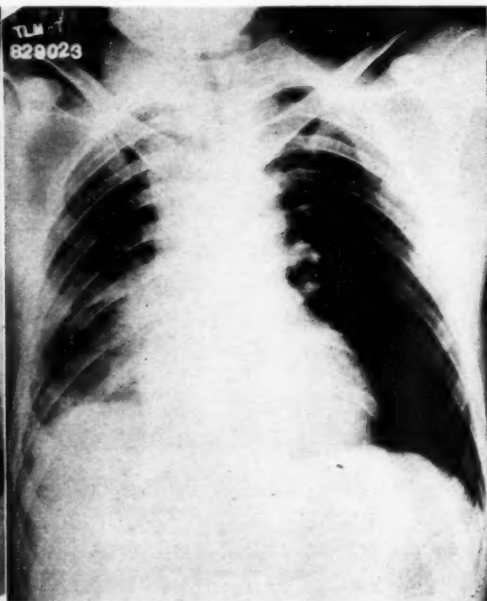


Fig. 2. March 16, 1933. Resolving atelectasis.

injuries to the wall of the thorax, and as a complication of abdominal surgical procedures. He referred to it as "massive collapse" or "active lobar collapse." However, in 1907, Barr first reported on massive collapse of the lung as a postoperative complication.

In 1845 Mendelssohn produced massive collapse experimentally by occluding the bronchi, and in 1897 Lichtheim showed that massive collapse resulted from the removal of air from the alveoli by the blood stream following obstruction to the bronchi. This was shown more conclusively, in 1930, by Coryllos and Birnbaum by gas analysis of the air in the alveoli and the peri-alveolar capillaries.

As an army medical officer in France during the World War, Bradford observed massive collapse associated with various types of gunshot wounds, and he mentioned that the confusing findings in wounds of the thorax are not always due to hemothorax, but to the massive collapse. In many cases the wounds did not perforate the pleura and yet collapse occurred. In other cases, the collapse occurred on the side opposite the wound in the thorax, and he referred to this as "contralateral collapse." He also observed that massive collapse was not infrequently associated with wounds of the pelvis and buttocks.

In 1927 Wilson reported having noted markedly increased negative pressure in the intrapleural space in cases of massive collapse, and as a practical application of this finding, Habliston, in 1928, relieved the distressing symptoms of the condition in four cases by developing an artificial pneumothorax. He strongly advocated the artificial production of pneumothorax in

REPORT OF CASE

A man, aged twenty-one years, was operated on March 11, 1933, for repair of a right inguinal hernia. During the first two days after operation the temperature remained about 100° F., the pulse was slightly elevated, and there was some coughing. About 4:00 p. m. March 14, there was a rise in temperature to 102° F. and a corresponding rise in the pulse rate. The cough became more troublesome, and more productive. The patient became apprehensive, somewhat restless, and experienced rather severe pain in the right side of the thorax during respiration, and especially when coughing. His face was flushed and his distress was very apparent. Moderate dyspnea was present.

It was noted on examination that expansion of the right side of the thorax was much less. There was decreased resonance to percussion over the entire right side, and the heart was displaced to the right. Dulness at the right base suggested elevation of the diaphragm. Tactile and vocal fremitus were markedly decreased. Auscultation disclosed a decrease in intensity of breath sounds. A diagnosis was made of massive collapse of the right lung, and oxygen therapy was instituted immediately.

From a roentgenogram of the thorax (Fig. 1) at this time a diagnosis was made of massive collapse; it was noted that the right side of the diaphragm was elevated, and the contents of the mediastinum were drawn to the right, as a result of the increased intrapleural negative pressure.

Two hours after the application of the oxygen the

patient appeared to be considerably relieved. About twenty-four hours later the temperature and pulse rate had dropped almost to normal, and the oxygen was removed. The following morning, March 16, the patient was again examined. The wall of the right side of thorax moved normally. The chest was resonant to

chyma of the lung after bronchial obstruction depends on the microbe infecting the obstructing mucus. A nonvirulent organism may induce mild pneumonia as a sequel of atelectasis, whereas a more virulent organism may cause a severe type of pneumonia, supuration or gangrene.

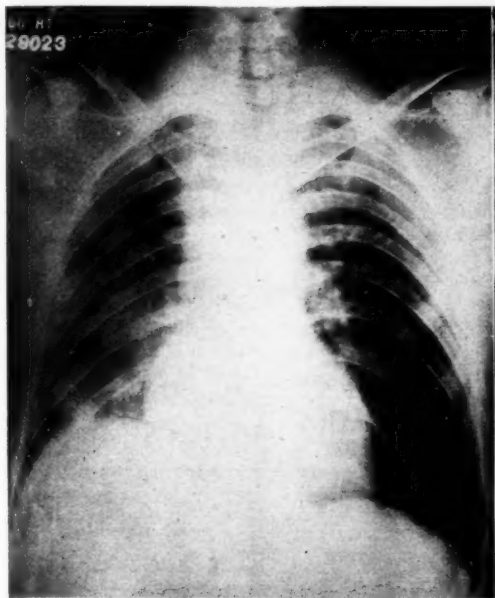


Fig. 3. March 17, 1933. Passive congestion.

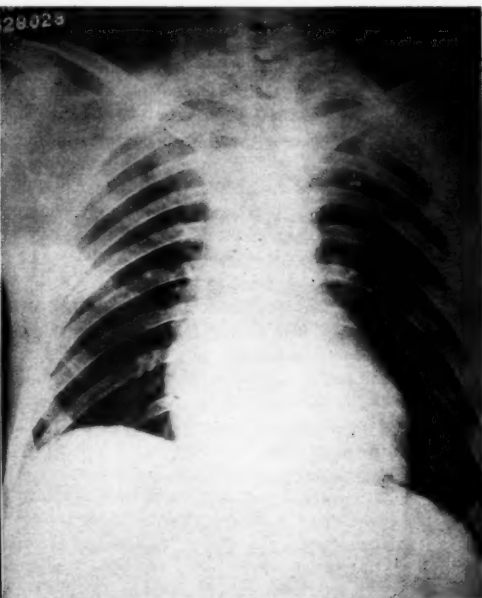


Fig. 4. March 21, 1933. Normal thorax.

percussion, and tactile and vocal fremitus were present. Breath sounds were heard on auscultation. A diagnosis of resolving atelectasis was made from a roentgenogram of the thorax (Fig. 2). March 17 the condition was practically the same as on the previous day, with the exception that moist râles were heard over the entire side, and on percussion an area of dullness was found posteriorly at the base on the right. A roentgenogram taken at this time (Fig. 3) resulted in a diagnosis of extensive bronchial pneumonia.

March 21, the seventh day after onset of symptoms in the thorax, the patient felt very well, and a roentgenogram (Fig. 4) showed the condition of the thorax to be normal.

COMMENT

It is apparently either very difficult or impossible in many instances to make a differential diagnosis of passive congestion and bronchopneumonia from the roentgenogram alone. Although this is the period in which bronchopneumonia may occur following massive collapse, the condition of the patient and the absence of elevated temperature and pulse indicated that if pneumonia were present, the causative organism was of low-grade virulence. In 1929 Coryllos produced experimental evidence to show that the fate of the paren-

In consideration of the postoperative pulmonary complications, a point of speculative interest arises. In the past, it has been more or less generally accepted that postoperative complications of the thorax have occurred with frequency as follows: (1) bronchial pneumonia, (2) infarcts of the lung, and (3) massive and lobar collapse. Massive collapse, although not as common as the first two conditions, probably occurs more frequently than is generally thought and cannot be said to be a rare condition.

In cases of postoperative complications of the thorax in which the condition lasts only a few days and the findings on auscultation are not serious, it is reasonable to suspect the presence of small areas of atelectasis rather than of bronchial pneumonia even though bronchial pneumonia may be diagnosed from the roentgenogram. In most such cases elevation of temperature and pulse rate is slight, and lasts for a day or two only. It is legitimate to speculate on the question of whether or not the most common postoperative complication of the thorax is primarily atelectasis. It would be difficult to answer this question, since small areas of atelectasis do not cause death. Also, no practical application can be made, unless in the future bronchial aspiration, carried out immediately following operation, causes marked diminution of complications of the thorax.

PRESIDENT'S LETTER

CANCER IN MINNESOTA

The report on cancer, as the result of the state-wide survey on cancer made by Dr. Frank Rector, one of the four field representatives of the American Society for the Control of Cancer, is a document of such vital interest to the medical profession of the state that we hope to place a copy in the hands of all our members.

A disease which has in thirty years mounted from sixth place as a cause of death to second place, certainly presents food for thought. Statistics show the average duration of symptoms to be two months before the cancer patient presents himself for examination, and after examination by the original physician consulted, a second period of seven months before adequate treatment is begun. This, coupled with the fact that the chance for a permanent cure decreases 16 per cent per month, is a terrible indictment of the medical profession today.

How many breasts would be watched for seven months if the entire profession of the state realized that each month's delay decreased the chances of recovery by 16 per cent? How many men in the state use Lugol's solution on the cervix as a differential diagnostic point between normal and pathologic tissue? How many early biopsies are done by competent pathologists on the patient living at a distance from a medical center? The lack of the ability to pay the fee is no valid argument when so many pathologists are willing to donate such services when the patient cannot pay the fee. How many men throughout the state realize that the destructive action of radium extends for a distance of 3 cm. only, hence the necessity, after the use of radium in cancer of the uterus, for deep x-ray therapy. Dr. Litzenberg makes the statement that treating cancer of the uterus by radium alone, without subsequent deep x-ray treatment, may be compared to the incomplete operative removal of a malignant tumor.

The missionary work of our state-wide committee on cancer, should start in the county societies. In conjunction with the university and the committee on hospitals and medical education, every county society in the state may have, for the asking, an annual cancer meeting which would be worth while. We hope, in addition, to have a cancer page in each issue of MINNESOTA MEDICINE, and that the committee on Public Health Education will do their part to make the public "cancer conscious" without producing "cancer phobia."

We hope to have the hospital records on cancer as recommended by the American College of Surgeons, adopted by all hospitals in the state. Radio talks on cancer will continue. Our secretary has 332 country newspapers which will accept news stories on cancer or any other medical subject. We expect to be able to announce that the university will offer at least two short cancer post-graduate courses in 1934. Cancer subjects, as well as a cancer exhibit, will be presented at the Duluth meeting. Dr. O'Brien has found students most receptive to discussions on cancer. Cancer is a live subject for addresses before parent-teachers' organizations.

Write to The American Society for the Control of Cancer, 1250 Sixth Ave., New York City, for lay literature on cancer for your waiting room tables.

The State Medical Association is helpless without general coöperation. Let's get going.



President,
Minnesota State Medical Association.

EDITORIAL

MINNESOTA MEDICINE

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Southern Minnesota Medical Association, Northern
Minnesota Medical Association, Minnesota Academy of
Medicine, and Minneapolis Surgical Society.

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HYPOTENSION

Hypotension is not as uncommon as one would be led to believe from the relatively few discussions that one reads in regard to this condition, although in various studies by Alvarez and by Barach, the incidence has been given as varying from 2.2 per cent to 5.5 per cent, with an average of about 3.5 per cent.

In earlier investigations confusion arose as to what systolic pressure should be considered to be the upper limit for patients with hypotension, because of variations arising from the use of auscultation and palpation as methods of determination. The auscultatory method is now used en-

tirely, and 105 to 110 millimeters of mercury or less, systolic, is considered to be a hypotensive level for adults.

Members of the medical profession are familiar with the secondary hypotension commonly observed in convalescence from acute illness, especially from diseases of the upper part of the respiratory tract, and in Addison's disease, myxedema, some forms of anemia, tuberculosis, Froehlich's syndrome, mitral valvular heart disease, shock, and conditions in which the myocardium is failing, but concerning essential hypotension they usually are at a loss for an explanation.

Several important questions frequently arise in the mind of the physician who is caring for patients with essential hypotension. What is the cause and background of this condition? Is the endurance of these patients normal or reduced? Are they able to resist infections and disease? Is their expectancy of life comparable with that of patients whose blood pressure is normal? Do they have an equal chance in the event of surgical operation, and as a corollary to this last, should only operations of necessity be performed, or may those of election also be included?

In 1922 this subject was given a stimulus by Roberts, who analyzed 444 cases of hypotension in regard to classification, sex, age, associated diseases and laboratory studies. Friedlander expressed the belief that the hypotension may result from the poisonous effect on the capillaries of histamine and other vaso-dilating substances that constantly are being produced in the body. Barach's hypothesis is that respiratory deficit and decreased oxidation result from a poor respiratory apparatus and that the combined effect is hypotension. Fossier has presented a theory based on the mechanical effects of the asthenic habitus of the persons in this group. Meakins has emphasized the occurrence of hypotension in the presence of jaundice. The presence of hypoglycemia with hypotension was first observed and is now being studied by Barach. Mortensen attempted to correlate the hypoglycemia found in cases of hypoglycemia with a sympathetic fatigue and resulting hyposuprenalemia as a cause of the easy physical fatigue that these patients exhibit. Kisch presented an extensive review of the literature in 1930.

In a recent study of 250 patients with essential hypotension, in which the blood pressure was 100 mm. of mercury or less, the group mortality following major surgical procedures was

only 1.6 per cent, which is less than that for an unselected group undergoing similar operations. It was noteworthy that those who died following operation were all elderly. This study would indicate that patients with hypotension can undergo operations of election as well as those of necessity, and that the resistance of patients in this group is high.

The expectancy of life in this group has been stated by Fischer to be better than average, for he found that the expected mortality was only 35 per cent of that found in the standard American tables of mortality.

Thus, some of the queries regarding this problem have been answered, but the question of etiology is none too clearly explained and remains a challenge to future investigation.

J. STUART McQUISTON, M.D.

CWS PROJECTS FOR NURSES IN MINNESOTA

The very urgent need for increased employment has been met to a large extent by the CWS. The speed with which the Minnesota administrators of the CWS put into employment the state's quota of some 85,000 unemployed persons has been an amazing achievement.

Of the large number of men and women given work, approximately 200 have been nurses. No accurate summary of the type of work being done by these nurses is at present available. The bulk of them come under the adequate supervision of established institutions such as Ancker Hospital in Saint Paul, the General Hospital in Minneapolis, etc.

Considerable numbers are doing bedside nursing under physicians' supervision throughout the state. Others are doing school nursing or some type of Public Health nursing. A real effort is being made to take up such slack as may have been left here and there under the stress of the emergency orders for speed in giving out jobs.

A special project under the state Civil Works Service administration has been assigned the State Health Department at the request of Mr. Harry Hopkins, Federal Relief Administrator. Last fall the Children's Bureau suggested the need for a survey of the health and nutritional needs of children in families on relief. The special project will facilitate this survey. It proposes that a nationwide study be made. To Minnesota are allotted forty Public Health nurses with three supervisors. These are to be under the immediate direction of Miss Olivia Peterson, Superintendent of Public Health Nursing for the state in the Division of Child Hygiene of the State Department of Health.

A program under which these nurses may operate has been drawn up, the supervisors have been engaged and about half of the forty nurses

have been engaged to date. These nurses must be adequately trained in Public Health nursing, and at this time such nurses are at a premium.

Events progress so rapidly in this project that a final statement cannot be made at this time. Every effort is being made to make the work of these Public Health nurses fit into the Federal program of relief work for doctors, as well as to adapt it to the individual needs of each county and to harmonize it with existing facilities and institutions.

CWA MEDICAL AND HOSPITAL CARE

Since November 16 last the Civil Works Administration has furnished some four and a half million men and women with jobs. Work has been found for this large army in many cases by resorting to the pick and shovel and instituting numerous types of surveys. This vast number of individuals, equivalent to our enlistment in the World War—the 85,000 in Minnesota equivalent to an army division—has been taken into the employ of the Federal Government and they are entitled to free hospital and medical care. The program is admittedly a temporary expedient, funds being available for its continuance to the middle of February with the likelihood that Congress will make further appropriations of a temporary nature. Wages paid are not the minimum necessary to keep the wolf from the door, but in some instances are higher than can be paid by industry.

The group has doubtless, temporarily at least, been relieved of the need of accepting medical charity. According to the United States Employes' Corporation Act of 1916, medical and hospital care shall be provided for government employes suffering from accident or illness in line of duty by Federal physicians and hospitals. For other accidents and illnesses the employe must provide for himself.

Through the combined efforts of representatives of the American Catholic and Protestant Hospital Associations and the A. M. A. in conference last month with the U. S. Federal Employes' Corporation Commission and the members of the Civil Works Administration, an agreement has been reached whereby CWA employes in need of medical and hospital care may be sent to private hospitals by their private physicians, the government to pay the hospital bill and the physician's fee with certain stipulations. The schedule of hospital changes has already been agreed upon, the \$3.50 a day allowance to cover certain routine nursing and laboratory service, and a materially reduced scale of charges for additional laboratory service has been agreed upon. It is specified that the agreement will not be continued beyond the period of emergency and is not a commitment on the part of the hospitals as to

the adequacy of the hospital service charges. Physicians' fees according to instructions sent out by the U. S. Employees' Compensation Commission to State Civil Works Administrators are not to exceed those charged by physicians to patients in the same income class as the injured person. To date the matter of the physician's fee has not been definitely settled in this state but indications are that the physician who desires to participate will be required to make a reduction in his usual minimal fee schedule. The physicians in each county will have to arrange details as to local available hospitals and physicians with the county CWA representative.

The indications are that the various Veterans Hospitals are not in a position from location or capacity to care for this additional load. Municipal hospitals are at present overcrowded. The utilization of private hospitals and private physicians is the logical solution of this temporary problem although it cannot be too strongly emphasized that the procedure is an emergency measure, from the standpoint of the medical profession as well as the hospitals, in order to furnish adequate medical care for this group of additional government employees.

WHAT THE CWA AND THE FEMR MEAN TO THE PHYSICIAN

RECENT INTERPRETATIONS AND DECISIONS

By E. A. MEYERDING, M.D.

Washington has held that employees of the CWA (Civil Works Administration) and the CWS (Civil Work Service which is organized for the purpose of making studies and surveys of various kinds in contradistinction to the CWA construction projects) are federal employees and, therefore, necessarily come under laws governing all federal employees. Authorities in charge of these employees must comply with the laws. No changes can be made to apply to these emergency employees except by act of Congress.

To members of the medical profession who find the operation of these laws in employment under CWA unsatisfactory, it should be pointed out that the laws have been on the statute books for a long time. They have come to the attention of many individuals for the first time, now, because current emergencies have brought them to the fore. It is obviously impossible to change the laws at short notice in order to make their operation in this instance more palatable to individual groups.

PROFESSION MUST COÖPERATE

The only course open to the medical profession in the handling of injuries of employees of the CWA and the CWS is to coöperate fully and intelligently with the federal authorities in charge and with the United States Employees Compensation.

The American Medical Association is in active contact with officials in charge and is taking every precaution to see that arrangements are made on the basis of an emergency which will terminate within a period of a few months. They have approved the plans of the Administration as the following quotation from a letter to state secretaries, dated January 8, 1934, from William C. Woodward, director of the Bureau of Legal Medicine and Legislation of the A. M. A. shows.

"The principles to be followed by the United States Employees Commission and the Federal Civil Works Administration in the

hospitalization of Civil Works Administration Employees have been agreed on. They have received the approval of representatives of the American Hospital Association, the Catholic Hospital Association and the Protestant Hospital Association and are to be recommended to the members of those organizations for acceptance.

"The United States Employees Compensation Commission holds that the law requires that patients entitled to hospitalization or medical service at government expense be referred to non-federal hospitals and to private physicians only when United States hospitals and medical officers are not available."

BULLETIN TO LOCAL ADMINISTRATORS

Recognizing the fact that Federal facilities are not available or adequate in most communities where CWA employees are at work, the United States Employees Commission, in a bulletin to local administrators dated January 8, has enunciated a policy of utilizing civilian physicians and hospitals. Copies of this bulletin have been sent by the Minnesota State Medical Association office to county officers, council members, committee chairmen and delegates of the state association.

In this bulletin, local administrators of CWA work in each county are instructed to take up the matter of treatment of injured employees with their local county medical societies. A schedule is to be arranged between them whereby all reputable licensed physicians in the county who are accessible and who desire to handle such work on the fee basis stipulated by the commission, shall have a fair chance to treat these injured employees.

Mr. A. B. Hemp, Minnesota State injury officer for the CWA, made the following statement about the management of the work under his jurisdiction at the State Office, January 17:

"The Commission and the CWA Administration wish to work in complete understanding and harmony with the medical profession. They wish to give all reputable physicians who desire it a chance to do the work in their own communities and they feel that the best way to accomplish that end is to allow local administrators to deal directly with physicians in their districts."

Obviously, it is to the interest of physician's in every community to meet with their local administrators and make arrangements jointly with him and with their fellow practitioners, taking into account local problems, peculiarities and distances.

Following a policy clearly defined by Harry L. Hopkins, director of the Civil Works Administration, no special government physicians are to be designated in rural districts as the following paragraph from a letter from the chief assistant claim examiner in Washington to a local CWA administrator in Minnesota dated January 13, will show.

"You are advised that _____ is not a designated physician of this commission (the United States Employees Commission). It is suggested that you use your local doctors in rotation as recommended by the County Medical Society. However, it will not be necessary that you confine your selection to physicians who hold membership in the county medical society. Any reputable physician may be used for treating injured employees of the Civil Works Administration."

FOR LARGE CITIES

The policy outlined above has been altered somewhat in the large cities according to Mr. Hemp, and at date of going to press (January 17). Dispensaries with physicians in the employ of the CWA have been set up at convenient places for handling so-called First-Aid cases in the cities. Where injuries require treatment that cannot be given at the dispensaries, the men will be sent to specialists and hospitals as arranged between the local administrator and the County Medical Society involved.

The Civil Works Administration and Commission as now organized are undoubtedly disposed to deal fairly and sympathetically with the medical profession.

It rests with the profession, itself, to coöperate fully with the administration. The alternative, in spite of the

above outlined policies, will undoubtedly be the designation of government physicians to do all of the work.

NEW COUNTIES ON FEDERAL EMERGENCY RELIEF

Sixteen counties have been added to the list of Minnesota counties organized for relief, since publication of the list in the January issue of MINNESOTA MEDICINE.

They are Clay, Douglas, rural Hennepin, Lincoln, Lyon, Morrison, Polk, Red Lake, Redwood, Renville, Stevens, Swift, Todd, Wadena, Wilkin and Yellow Medicine.

Physicians in these additional counties are now eligible to receive fees from federal relief funds for care of their relief patients. The same procedure as outlined in the January issue, is necessary; the physician who desires to do such work must send his name to the local relief worker in charge of relief work in his own county.

It is the impression of officials of the State Board of Control in charge of the FEMR, that the plan is working smoothly in the majority of rural counties in the state.

Payment to Ramsey county physicians desiring to care for relief patients under the agreement reached by the Ramsey County Medical Society and the Board of Public Welfare have not been made to date.

The Ramsey County Board of Welfare is taking the matter under advisement as this issue goes to press, waiting until funds are available to allocate to this purpose, according to G. A. Lundquist, executive secretary.

Medical men who are interested in obtaining employment of any kind under the CWA should consult the local CWA Administrator. No money can be paid to any employees whose applications are not on file in proper form with the administrator.

OBITUARY

Dr. Benjamin F. Simon

1870-1933

Dr. Benjamin F. Simon, Saint Paul health officer for over fifteen years, died suddenly on December 15, 1933, at the age of sixty-three.

Dr. Simon was born in Le Sueur County June 13, 1870, the son of a clergyman. After attending Hamline University and taking three years of medical training at the University of Minnesota he completed his medical course at Rush Medical College in 1900.

After practicing medicine in Saint Paul for nearly twenty years, Dr. Simon was appointed health officer in Saint Paul on June 13, 1918, just preceding the influenza epidemic. The control of the smallpox epidemic by thorough vaccination in 1924 was much to his credit. During his fifteen years of administration more than 65,000 diphtheria immunizations were accomplished in the school children of the city.

Dr. Simon was a member of the Ramsey County Medical Society and the State and American Medical Associations. In October he went to Washington to receive the thirty-third degree in Masonry. He was past potentate of Osman Temple of the Shrine.

Dr. Simon is survived by his widow, a son Grant, daughter Dorothy, two brothers, Dr. E. J. Simon and Almon R. Simon of Saint Paul, and four sisters, all of whom are teachers in the Saint Paul public schools.

OF GENERAL INTEREST

At the annual dinner meeting of the Minnesota Academy of Medicine, Dr. Archibald Wilcox was elected president for the year 1934 and Dr. A. R. Hall was elected vice president. Dr. R. T. LaVake was reelected secretary.

The Minneapolis Surgical Society will hold its twelfth Annual Anniversary Foundation Dinner on Thursday, February 1, 1934, at the Minneapolis Club in Minneapolis. The guest speaker will be Dr. Lester R. Dragstedt, professor of surgery at the University of Chicago, and his subject will be "The Etiology of Gastric Ulcer." The Minneapolis Surgical Society which was founded in 1922 and which has a limited membership of fifty is celebrating its twelfth anniversary with a completed membership list.

Dr. Charles N. Spratt was invited to demonstrate motion pictures of his cataract and glaucoma operations at a meeting on January 22 before the California Study Club at Los Angeles. Dr. Elschig, of Prague, was the guest speaker at the same meeting. Dr. Spratt also showed his motion pictures at Aberdeen, S. D., on January 9, and at the Des Moines Academy of Ophthalmology on January 15. He was also on the program at meetings of Ophthalmological Societies at Long Beach and San Diego.

Dr. E. Starr Judd, Professor of Surgery in the Mayo Foundation, has endowed an Annual Lectureship in Surgery at the University of Minnesota.

The first Judd Lecture will be given by Dr. Dean Lewis, President of the American Medical Association and Professor of Surgery at the Johns Hopkins Medical School, on Tuesday, February 13, in the Anatomy Amphitheater at the University of Minnesota at 8:15 P. M. The subject of his lecture will be "The Hypophysis, the Master Gland: the Histology, the Physiology, and the Clinical Syndromes Associated with Its Lesions." Dr. Judd is a graduate of the Medical School of the University of Minnesota of 1902.

A Committee to Study Medical Care in Isolated Communities has been appointed by F. J. Savage, president of the Minnesota State Medical Association. This committee will make a careful study of the situation in remote communities at some distance from a physician where medical care is said to be insufficient.

Membership includes Dr. Savage as chairman, J. M. Hayes, Minneapolis, and W. L. Burnap, Fergus Falls, council members, and A. T. Agnew, International Falls; H. E. Binet, Grand Rapids; C. B. Lenont, Virginia; R. L. Burns, Two Harbors; C. A. Scherer, Duluth; J. L. Delmore, Roseau; G. I. Badeaux, Brainerd; O. F. Mellby, Thief River Falls; H. A. Burns, Ah-Gwah-Ching, and Einar Johnston, Bemidji.

MARTIN GUSTAV AND CAROLINE RUNICE HANSON FUND

On March 13, 1933, Dr. Adolph M. Hanson, of Faribault, Minn., executed a legal assignment to the Smithsonian Institution of all royalties accruing to him under a patent on his discovery, the isolation of the parathyroid hormone (extract of parathyroid gland and process of preparing same). In making this offer, Dr. Hanson, a lieutenant colonel in the Medical Reserve

Corps, United States Army, stated that he wished the gift to appear as a memorial to his father, Martin Gustav Hanson, and his mother, Caroline Runice Hanson, and that he wished the income to be applied "to some scientific purpose, preferably in chemistry or medicine." He added, "I hope that my example may serve as an inspiration for others in the future and add to the interest in our National Institution."

The Institution accepted the gift, and already considerable sums have been received from royalties. These will be applied to the scientific work of the Institution, giving preference whenever practicable to researches in chemistry or medicine, in accordance with the wishes of the donor.

Dr. Lester R. Dragstedt, Professor of Surgery at the University of Chicago, will give the oration on Surgery at the next annual anniversary meeting of the Minneapolis Surgical Society to be held at the Minneapolis Club, February 1, 1934.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

NORTH DAKOTA QUACK WARNED TO REFRAIN FROM PRACTICING

J. Theodore Weber, about twenty-six years of age, who lives at 206 4th St. S., Wahpeton, North Dakota, has been warned by Mr. Brist on behalf of the Minnesota State Board of Medical Examiners to refrain from practicing in the State of Minnesota without a license. For sometime Weber, who claims to be a magnetic healer, has been coming to Fergus Falls, Pelican Rapids and Rothsay, Minnesota, remaining about a week on each trip. When interviewed at Wahpeton, North Dakota, Weber admitted that he had no license; that he was a former student at the Palmer School of Chiropractic at Davenport, Iowa, and was seeking to practice in order that he could get enough money to complete his so-called education. Weber was told that if he returned to the State of Minnesota a warrant would be issued for his arrest. This is pursuant to arrangement made with Mr. Townley, County Attorney of Ottertail County.

Weber stated to Mr. Brist that he would not return to the State of Minnesota. If this man attempts to practice healing in any form in the State of Minnesota in the future, the Minnesota State Board of Medical Examiners asks that it be immediately notified at 524 Lowry Medical Arts Bldg., St. Paul, Minnesota.

HOUSTON COUNTY WOMAN CONVICTED OF MANSLAUGHTER

State of Minnesota *vs.* Mae Jackson Mitchell

After a trial lasting five days, Mae Jackson Mitchell, sixty-three years of age, of Hokah, Minnesota, was convicted by a jury of the crime of manslaughter in the first degree. Judge Vernon Gates of Rochester, Minnesota, who presided at the trial, sentenced the defendant to an indeterminate term in the Women's Reformatory at Shakopee, Minnesota. The sentence is for five to twenty years as provided for by law.

The defendant was arrested on August 25, 1933, on a complaint signed by the father of a twenty-two year old Winona County girl whose death occurred at La Crosse, Wisconsin, on August 23, 1933, from peritonitis and general septicemia following the performance of a criminal abortion. Mrs. Mitchell testified that she did not perform the abortion, but admitted that the girl was there at her place for that purpose. The defendant also testified that for thirty or forty years she had done practical nursing and midwifery in Houston County, but was neither a registered nurse nor a licensed midwife.

During the trial, and before sentence, Mr. L. L. Dux-

bury, representing the defendant, attempted to show that the prosecution was influenced by the Minnesota State Medical Association. This was denied by Mr. Brist who stated to the Court that he appeared at the request of the County Attorney, Mr. William E. Flynn, and on behalf of the Minnesota State Board of Medical Examiners.

MINNEAPOLIS MEDICAL CORPORATION PREVENTED FROM PRACTICING MEDICINE

State of Minnesota *ex rel.* Harry H. Peterson, Attorney General, *vs.* The Medical Service Company, a corporation.

Following an investigation made by the Minnesota State Board of Medical Examiners, Quo Warranto proceedings were instituted on December 2, 1933, by the Honorable Harry H. Peterson, Attorney General of the State of Minnesota, to have forfeited to the State of Minnesota the charter of The Medical Service Company, a Minnesota corporation.

The Medical Service Company, 404 Donaldson Bldg., Minneapolis, Minnesota, was organized August 1, 1933, by Dr. Edwin C. Muir, a licensed physician, Mr. H. W. Strong and M. R. Muir. This corporation ostensibly was organized for the following purposes:

"The purposes of this corporation are to own and operate a clinic or hospital where patients may receive medical or surgical treatment and to enter into contracts with individuals or corporations to furnish them or any of them medical care or treatment; and to enter into contracts with other corporations for furnishing and providing medical or surgical care and treatment to their employees."

Following the organization of this corporation medical business was solicited by lay representatives of the corporation in the City of Minneapolis, and particularly among the school teachers, where complete medical services were offered for the sum of \$1.50 per month. This service included examination, medical treatment, prescribed medicines and surgery.

A stipulation has been entered into by the Attorney General and The Medical Service Company, whereby the corporation is to be completely dissolved according to law on or before February 20, 1934. There is to be no further solicitation of business of any kind whatsoever. Unless the corporation is dissolved on or before February 20, 1934, judgment will be entered annulling the franchise of the corporation and forfeiting its charter to the State of Minnesota.

The Supreme Court of Minnesota, and the Supreme Courts of other states have repeatedly held that the practice of medicine can be engaged in only by a licensed individual; that the practice of medicine is not a proper field for corporate activities. The Minnesota State Board of Medical Examiners intends to enforce this provision of law and to have legal proceedings instituted to stop such unlawful practice of medicine.

LASH-LURE

There have been sixteen cases of severe untoward effects reported following the use of a single product called "Lash-Lure." This preparation is an aniline dye having for its base probably either paraphenylenediamine or paratoluylenediamine or some closely related substance. Every physician, and practically every responsible beauty parlor, knows the risk that is run in the application of dyes of the aniline type to the hair of the scalp. It has long been good beauty parlor practice to insist that persons who are to be subjected to an aniline hair dye should be tested for sensitivity to that product. Because of the irritating effects of such dyes, there is no justification for the use of so dangerous a substance around the delicate tissues of the eye. Cosmetics are under no national control. The Lash-Lure tragedies emphasize the need of some sort of national control over the sale of cosmetics. (Jour. A. M. A., November 11, 1933, p. 1566.)



A FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION



Outline of Plans for 1934

The year 1934 finds the medical profession confronted with problems of considerable complexity and importance. Of necessity, during the past few years we have been compelled to take a more complete inventory of the equipment, both economic and scientific, with which we carry on our professional activities.

The public have shown an increasing interest in Public Health matters. Numerous organizations are active in promoting health propaganda and activities. Many of these organizations are controlled and motivated by law groups. The Minnesota State Medical Association has set a high standard of efficiency in coöperating and guiding these various activities. The personnel of the Public Health Education Committee of the State Medical Association feel that we have a definite responsibility in the work of this committee.

Our by-laws state the purpose of this committee to be as follows:

1. To strive to develop an intelligent public viewpoint toward the medical profession.
2. To coöperate with the various agencies throughout the state whose function is the promotion of public health, and whose governing bodies are composed in whole or in part of laymen, so that from a medical standpoint these agencies shall be intelligently administered.
3. To use such measures throughout the state as may be necessary to eliminate fraudulent medical advertisements from the public press.
4. To aid and encourage each component society to conduct at least one annual public health meeting.
5. To encourage public health educational matters through the channels of the public press, radio, movies and lecture platform.

The committee hope to stress particularly during 1934

1. Preventive Medicine.

A. Immunization

1. Smallpox—we grow careless regarding vaccinations.
2. Diphtheria—many cities have practically eliminated diphtheria as a cause of death. Board of Health Statistics show twenty-six deaths from diphtheria in this state during 1933.
3. Scarlet fever—vaccination has been shown to be effective in a definite percentage of children.
4. Typhoid fever.

B. Malnutrition—The Child Health Recovery program of the U. S. Department of Labor recognizes the importance of undernutrition particularly at this time.

C. Mental Hygiene—A field of medicine that is being ignored by too many of us.

2. Tuberculosis Check-up. The public are becoming educated to the value of this measure. We must not lag behind as a group.
3. Cancer. The President's February letter brings forth startling facts concerning delay in advising treatment by the physician.
4. Heart Disease. The greatest cause of death in Minnesota and should receive consideration in all county society programs.
5. Conservation of Hearing and Vision.
6. Birth Control and Sterilization of the Unfit. The medical profession would do well to have a thorough understanding of the various medical aspects of these problems, and also the legal questions involved.

The resources of this committee are at the disposal of every member of the Association. These resources include a speaker's bureau and a reference library.

That we may be of the greatest service to the profession throughout the state we welcome suggestions pertaining to this work, from any member.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MEDICAL BROADCAST FOR THE MONTH

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 10:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of February will be as follows:

February 7—Heart Fear.

February 14—Measles.

February 21—The Common Cold.

February 28—Tumors of the Skin.

MAYO FOUNDATION LECTURES

A special program of lectures and demonstrations in medicine will be held under the direction of the Mayo Foundation from March 5 to 9, inclusive. Mornings will be devoted to surgery, demonstrations of oxygen therapy and of intravenous therapy, and consideration of postoperative complications. In the afternoons medical subjects, including gastro-enterology, dermatology and syphilis, will be discussed, and a symposium on dyspnea will be held. In the evenings clinico-pathologic conferences will be conducted.

While this program is arranged primarily for the Fellows of the Foundation, visiting physicians are invited to attend.

SOUTHEASTERN SURGICAL CONGRESS

The Southeastern Surgical Congress will hold its fifth annual assembly in Nashville, Tennessee, March 5, 6 and 7, 1934. The Andrew Jackson Hotel will be hotel headquarters and the lectures and exhibits will be in the War Memorial Building.

The following doctors will occupy places on the program: Fred H. Albee, New York; W. Wayne Babcock, Philadelphia; S. O. Black, Spartanburg; Vilray P. Blair, St. Louis; Frank K. Boland, Atlanta; J. B. Brown, St. Louis; D. B. Cobb, Goldsboro, N. C.; George W. Crile, Cleveland; T. C. Davison, Atlanta; John F. Erdmann, New York; P. G. Flothow, Seattle; Seale Harris, Birmingham; M. S. Henderson, Rochester, Minn.; Arthur E. Hertzler, Halstead, Kansas; Chevalier Jackson, Philadelphia; Walter C. Jones, Miami; Dean Lewis, Baltimore; Joseph F. McCarthy, New York; C. Jeff Miller, New Orleans; A. J. Moonney, Statesboro, Ga.; John J. Moorhead, New York; Edward T. Newell, Chattanooga; Fred Rankin, Lexington, Ky.; Paul R. Ringer, Asheville; Stewart Roberts, Atlanta; George H. Semken, New York; Phil C. Schreier, Memphis; Arthur M. Shipley, Baltimore; H. E. Simon, Birmingham; A. O. Singleton, Galveston; J. R. Young, Anderson, S. C.; Waitman F. Zinn, Baltimore.

For information, write Dr. B. T. Beasley, 1019 Doctors Building, Atlanta, Georgia.

ANNUAL MEETING OF COUNTY OFFICERS AND NORTHWEST MEDICAL CONFERENCE

The Annual County Officers Meeting of the Minnesota State Medical Association will be held Saturday, February 24, at the Lowry Hotel in Saint Paul. The meeting will begin at 9 A. M. and will include a noon luncheon and an afternoon program.

The Northwest Medical Conference, attended by officers of state medical societies from all of the Northern and Northwestern states, meets annually in Saint Paul as a central point. It will hold its 1934 session Sunday, February 25, at the Lowry Hotel. Several guests to the Sunday conference are expected to be present and speak at the county officers' meeting Saturday.

Important recent development in the government's Civil Work program and in the operation of Federal Emergency Medical Relief will occupy a large share of program time. Complete information on the present status of the program will be available and an extensive discussion of its relation to physicians, nurses and dentists and to medical practice in general is scheduled.

Among other subjects to be discussed are administrative matters involving county and district medical societies and including the building of scientific programs, a model constitution and by-laws, office and record keeping equipment; an outline of the service to county and district societies of the Public Health Education Committee; a discussion of preventive medicine and immunization as part of medical practice; a review of legislation in the special session and discussion of the legislative program for 1935.

All members are invited and are welcome to attend this meeting. Expenses of secretaries are paid.

WASHINGTON COUNTY SOCIETY

The Washington County Medical Society held its regular monthly meeting January 9 at Stillwater.

D. Greth Gardiner, St. Paul, gave an illustrated lecture on "Bronchoscopy and Thoracoplasty." F. F. Callahan, Pokegama, discussed the paper.

THE HOSPITAL FORMULARY

The Council on Pharmacy and Chemistry reports that recently a committee issued a Formulary for the New York Hospital, and that an article by Robert A. Hatcher and Wendell J. Stainsby, which discusses some of the major problems of the Hospital Formulary, is in harmony with the ideals of the Council. According to the article of Hatcher and Stainsby, large hospitals find it necessary to limit the prescriptions of the staff mainly to selected formulas, and this system has tended to promote the use of proprietary formulas, which usually cost much more than their official equivalents without corresponding advantage. The formulary of the New York Hospital was prepared by a committee, which invited representatives of every department to present formulas desired for their departments. In every case where a complex formula or a proprietary preparation was desired the advocate of it was requested to present evidence of its superiority over the equivalent official preparation, and unless such evidence was submitted the committee declined to admit the article, or, in a few cases, admitted it with the proviso that it would be deleted unless evidence was presented that would justify its retention in a subsequent edition of the formulary. As indicated in the rules, this does not interfere with the therapeutic study of any proprietary preparation, nor does it prevent the use by any department in the hospital of any substance concerning the superiority of which the staff is so firmly convinced that it is willing to conduct a scientific study of its uses, or to provide it at departmental expense. This plan requires for its fullest success a highly skilled pharmaceutical staff capable of cooperating with the medical staff. The training of men to fill the pharmaceutical positions in such progressive hospitals constitutes at once an opportunity, and a challenge to the schools of pharmacy, for there are few such pharmacists now available. (*Jour. A. M. A.*, December 2, 1933, p. 1802.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

STATED MEETING HELD NOVEMBER 2, 1933

Vice-President, DR. MARTIN NORDLAND, in the Chair

PRESENTATION OF CERTIFICATE OF MEMBERSHIP TO LAWRENCE M. LARSON, M.D.

By MARTIN NORDLAND, M.D., *Vice President*

The Minneapolis Surgical Society was organized in 1922 by a group of young surgeons who saw the need and benefit of such an organization. There were twenty-nine charter members. The foresight and ability of these men account for the splendid organization we now have. Since then, the membership has been gradually increased, care being exercised to select men of a high type as well as those who would be interested in building up the society.

Some time ago it was voted that the membership should be limited to fifty active members and in May, 1933, this total was reached.

About a year ago it was voted by the Council to present each member with a certificate of membership. The certificates for the Charter members were to bear this special designation, and these credentials were to be signed by the original officers of the Society. All of the older members have now received their certificates. It was thought appropriate to present each newly elected member with his certificate after the reading of his thesis.

Dr. Lawrence Larson, who was elected to the Minneapolis Surgical Society last May, is the first member to receive his certificate formally, having read his thesis at the September meeting.

The Society is honored to have men of Dr. Larson's capabilities and qualifications become active members and I hope that he will find opportunity to give to the association and he in turn will be benefited by his affiliation with our group. I find it a pleasure to present him with his affidavit of membership.

Case Reports

THYROGLOSSAL DUCT CYSTS WITH PRESENTATION OF THE PATIENTS AND SLIDES

J. M. HAYES, M.D.

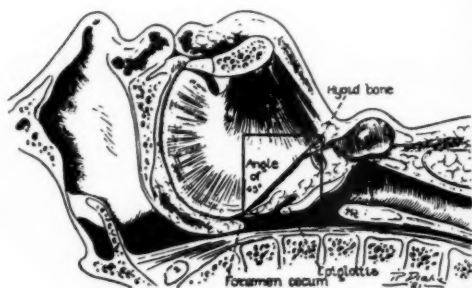
At the time I was called upon to take part in this program I had a child about three and one-half years old in my office presenting one of the best text-book pictures of a thyroglossal duct cyst I have seen for a long time. This cyst, about 2 cm. in diameter, was located in the mid-anterior portion of the neck at the level of the hyoid bone. The mass could be moved about freely and the tract, as far back as the hyoid bone, could be palpated. As you know, not many of these cases carry as striking a picture of the typical condition.

The two patients I have to present this evening are boys, six and ten years of age, the one operated in 1928 and the other in 1930. Both had been previously operated upon because of an acute infection in the cysts. At the first operation the cyst was merely opened and drained. In one of these patients the scar is much more marked on account of a previous severe infection. The abscess had dissected its way down toward the clavicle and the diagnosis was not so simple as in the other case.

In both of these cases the Sistrunk type of removal was done. The cyst and tract up to the hyoid bone were dissected out, then a section about 1.5 cm. long was taken from the hyoid bone. From this point upward and backward at an angle of 45 degrees to the hyoid bone, a block of tissue about 0.5 cm. in diameter was dissected out as far as the foramen cecum. The muscles and segments of the hyoid bone were

then sutured in the midline, the wound closed and a small penrose drain inserted.

It was my good fortune to have been working with Sistrunk about the time he determined to do this type of operation. The fact that there were so many cases of recurrence following previous operations, lead him to adopt this technic. In some of those with recurrence the cyst had merely been drained several times; in some the tract had been removed as far back as the hyoid bone; in some an attempt only had been made to remove the tract as far back as the foramen cecum.



The accompanying illustration is a drawing showing the relation of the cyst to other structures and the course of the thyroglossal tract to the hyoid and tongue (Sistrunk). Symptoms in many cases will recur if the tract posterior and superior to the hyoid bone is not removed.

DISCUSSION

DR. MARTIN NORDLAND: I operated upon a man within the last two years who had a thyroglossal duct cyst of rather large proportions. It was typically situated in the middle of the neck and was large enough to descend to a position between the two lateral lobes of the thyroid. The interesting part of the situation was that he also had a toxic exophthalmic goiter. The cyst was tense, about the size of a hen's egg and was thought to be an unusually enlarged median lobe of a diffusely enlarged thyroid gland.

At operation, when the cyst was recognized, the problem that presented itself was what to do with it. There was the danger of rupturing the cyst and infecting the field. To avoid this I first did a thyroidectomy in the usual manner and then dissected out the cyst according to the method of Sistrunk.

The patient made an uneventful recovery.

FIBROID TUMOR OF UTERUS

PRESENTATION OF A FRESH SPECIMEN

WILLARD C. PETERSON, M.D.

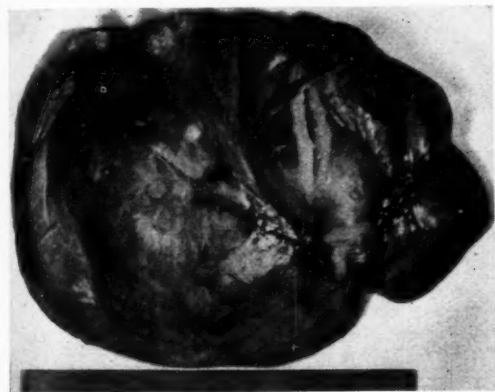
This tumor is presented because of its size. It is a large multiple fibroid weighing twenty-eight and one-half pounds.

The patient, a woman fifty-two years of age, came to my office two days ago with the main complaint of inability to eat only small amounts of food. On questioning her, she gave the following history:

She had always been well and strong but during the last four or five years she became more readily tired. Although her weight remained about the same, the patient's arms and legs became noticeably thinner and her abdomen increased in size. Her digestive disturbance consisted of a feeling of fullness and belching of gas after eating. Her bowels were normal. Menstruation had been regular but had become less in amount. She has one daughter, fourteen years of age.

Physical examination revealed a woman about five feet, eleven inches tall, weighing two hundred and thirty-four pounds. Examination was essentially negative with the exception of the abdomen which, on palpation, revealed a hard nodular mass extending from the symphysis to the xiphoid, and which gave the appearance of a greatly distended abdomen. Vaginal examination revealed the cervix somewhat softened and in the mid-line. X-ray examination was negative.

The patient was operated at Northwestern Hospital on November 1, 1933. A midline incision was made, extending from the symphysis nearly to the xiphoid. The tumor mass had crowded the intestines into the upper abdomen. It was adherent at several areas posteriorly, necessitating its removal extra-peritoneally. Post-operative convalescence was uneventful.



The accompanying photograph will give some idea of the size of the tumor and its appearance.

DISCUSSION

DR. MARTIN NORDLAND: How long has the patient been complaining of her abdomen?

DR. WILLARD C. PETERSON: She states that it has been distressing her for about a year and a half.

FUTURE SURGICAL STATUS OF COLLAPSE THERAPY PATIENTS

T. J. KINSELLA, M.D.

Experience at Glen Lake with both major and minor surgery and pregnancy in a group of patients with pulmonary tuberculosis who were being treated by the

various types of collapse therapy is summarized in the table below.

From this study, it is quite evident that necessary operative procedures may be undertaken in this group of patients without undue risk if due respect is paid to the tuberculous process and to the reduced respiratory reserve. Emergency surgical procedures may be undertaken here as in other tuberculous individuals without delay. Operations of election, however, should be postponed until the patient is well accommodated to the collapse and until the tuberculosis is quiescent, if the operative risk is to be held to a minimum. Local or spinal anesthesia is to be preferred to general anesthesia, particularly in the presence of active pulmonary tuberculosis. Spinal anesthesia to the 5th or 6th dorsal level has been well tolerated by all the individuals in this group. General anesthesia, particularly with nitrous oxide, is quite likely to be attended by cyanosis and imperfect relaxation because of diminished vital capacity. But one pulmonary complication, aside from tuberculosis, was encountered in the series in spite of the markedly diminished respiratory reserve.

These patients, the same as other individuals with active tuberculosis, demand a considerably longer convalescent period than nontuberculous individuals with the same lesion, if reactivation of the tuberculosis is to be avoided. The mortality encountered in this series is more closely related to the original pathology and the tuberculosis than to the diminished vital capacity and in only one instance do we feel that the collapse therapy had a direct bearing on the fatal outcome.

(This paper will appear in full in the *Journal of Thoracic Surgery*.)

DISCUSSION

DR. J. F. CORBETT: It is customary, in all operative cases, to institute hyperventilation following the operation. Would it have a tendency, in cases of tuberculosis, to aggravate the condition?

DR. T. J. KINSELLA: In answer to Dr. Corbett's question, we use hyperventilation in these patients where it is indicated but not as a routine measure. Deep breathing in the presence of active pulmonary tuberculosis is potentially dangerous. If circumstances demand the use of hyperventilation to prevent or treat a serious complication, or as an aid in the removal of secretions from the chest, then it must be used accepting the chance of a flareup of tuberculosis as being the lesser of two evils.

We do insist on frequent changes of posture, a daily raising of the individual's average amount of sputum and active motion of the extremities in all patients as a routine measure. Thus far pulmonary complications have been considerably less than we had anticipated.

DR. OWEN WANGENSTEEN: This instructive presentation of Dr. Kinsella well accentuates how great the respiratory reserve may be. At the same time it indicates that gradual accommodation is an important factor in the tolerance of pulmonary compression. The portion of Dr. Kinsella's study which is of most interest, I believe, concerns that group, with previous reduction of pulmonary ventilation by thoracoplasty or pneumothorax, subsequently submitted to laparotomy.

SUMMARY OF SURGERY DURING COLLAPSE THERAPY

Type of collapse	Surgery		Pregnancy	Anesthesia			Results	
	Major	Minor		Local	General	Spinal	Spread of Tuberculosis	Deaths
Unilateral pneumothorax	27	58	12	48	13	35	2	3
Bilateral pneumothorax	3	3	1	3	0	3	0	0
Phrenic nerve interruption	10	22	2	10	2	18	0	3
Thoracoplasty	22	23	5	21	11	18	2	2
Total	62	106	20	82	26	74	4	8

After an operation in the peritoneal cavity, there follows, for at least several days, a period during which the diaphragmatic component of respiration is almost obliterated. In the presence of previous contraction of thoracic expansion, it is somewhat surprising to see how well tolerated is the added burden of the considerably reduced abdominal component of respiration.

A few years ago a patient illustrating the importance of appraising carefully the significance of this factor came under my observation. A middle-aged hunchback, with a high grade of structural scoliosis of the spine, presented himself with a chronic intussusception of the pelvic colon due to a carcinoma of the sigmoid flexure. The thoracic cage was small and unusually deformed. The respirations were largely abdominal (diaphragmatic). A cecostomy was performed by one of my associates. Consequent upon the reduction of the diaphragmatic component of respiration incident to operation, cyanosis and difficulty in breathing developed soon after operation which remained refractory to treatment. The patient died without exhibiting (apart from the scoliosis) adequate pathologic effects to account for the reduction in pulmonary ventilation.

That patients, on the whole, however, with pulmonary compression withstand abdominal operations fairly well, as pointed out by Dr. Kinsella, is an important observation.

CANCER COMMITTEE PROGRAM

(Remarks made by chairman regarding April meeting)

DR. J. C. CORBETT: As you know, what is called the Cancer Committee has been authorized in this Society. The purpose of this committee is not at all to send propaganda to the public but to carry on an investigation aimed at dissemination of professional knowledge and, if possible, standardization of the treatment. Further, an attempt will be made to find out just what the status of treatment of cancer is with the profession at large.

Therefore, in a general way, it has been decided that a survey should be made of all the cases of cancer that were operated upon in 1933. Dr. I. Sivertsen has general supervision of this and there is one member from each hospital.

The next subject to be considered is, what are the

available resources for the treatment of cancer. How much radium is there available? How much x-ray is available? What general rules have been established for the treatment with radium and X-ray?

The third part of the program will be one in which we all will have to participate. That is, the report of five year cures. If a member of our society has had several breast cases in five years, he should report his five year cures as this group comes up for discussion, if possible, having microscopic sections and other material of that kind. When the subject of carcinoma of the stomach comes up, cures for that condition will be reported and so on, so each member may take part four or five times. We desire to give this subject the utmost consideration and it is a very important thing.

I do not know of any problem that concerns the general surgeon, particularly the men in general practice of surgery as most of us are, more than the cancer problem. Considering, for instance, the simple application of radium. We may have an operated case that is followed with radium. Some procedures are pretty well outlined. Cancer of the cervix has been quite well standardized, but there are other fields which are not so well established and the haphazard use of radium is not to be advised.

I think Dr. Nordland can perhaps accentuate that point a little more than I, because I must admit that when it comes to the application of radium to a tumor in some portions of the body I am at a loss to know just the most accepted technic.

We would like to have this meeting held in April and we want it to be a success.

DR. MARTIN NORDLAND: I have nothing to add except to emphasize what Dr. Corbett has said with reference to treatment of cancer in an accurate manner by the surgeon himself. The object of this future meeting will be to present to the society information concerning the proper use of radium. At the present time there is no well organized method of treating patients with cancer except at the University of Minnesota and at Rochester.

I believe it is possible for the surgeon himself to treat many cases of cancer effectively if proper methods are employed by him in the using of radium and radium emanations.

F. A. OLSON, M.D., *Secretary.*

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of December 13, 1933

The regular monthly meeting of the Minnesota Academy of Medicine was held on Wednesday evening, December 13, 1933, at the Town and Country Club. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the President, Dr. C. D. Freeman.

There were 57 members and 3 visitors present.

Minutes of the November meeting were read and approved.

Dr. John Butler, of Minneapolis, was elected to active membership in the Academy.

The following officers were elected for the year 1934: President, Dr. Archa Wilcox, Minneapolis; vice president, Dr. Alexander R. Hall, Saint Paul; secretary-treasurer, Dr. R. T. LaVake, Minneapolis.

The scientific program followed.

PRACTICAL EXPERIMENTS IN WHAT ACTUALLY CONSTITUTES A GOOD CLINICAL RECORD

DR. HALBERT L. DUNN, Director of University Hospitals, read his Inaugural Thesis on this subject.

ABSTRACT

I. The goodness of facts in medical records should be considered as a variable factor. Certain facts can be gathered with comparative accuracy by clerks; others are variable from one time to another even when gathered by the clinician upon the same patient. The accuracy of any recorded fact in the history and the physical examination may vary not only with the existence or lack of adequate definition, but also with respect to who asks the fact, how it is asked, the kind of patient who is the subject, and the mental or physi-

cal condition of the patient at the time of questioning.

II. It is essential to appreciate the difference between what we might define as a clinical record and a medical data sheet. The clinical record is the ordinary record of the physician, in which he takes the routine history and physical examination. The medical data sheet is defined as an adaptation of the principles used in gathering data for tabulation applied to the needs of the physician. The essential differences between clinical record sheet and medical data sheet are identified in the accompanying table.

the whole profession, or to the clinical men outside the hospital. Of course in the hospitals the histories might be made differently, and I think that on the whole we pay too little attention to our histories in the hospitals. The intern takes the history and usually makes the diagnosis and sometimes it is not the diagnosis we would make, but we let it go rather than say anything about it. In many such cases we adapt ourselves to the hospital record, and we don't care particularly.

There would be a great deal of value in standardizing hospital statistics. As Dr. Dunn says, it might be

NEEDS TO BE FILLED BY RECORD	CLINICAL RECORD	MEDICAL DATA SHEET
1. Continuity	Rough order—Elimination of non-essentials	Exact order and fixation of facts
2. Order and sequence	Rough order—Arrangement of sheets	Exact order and fixation of facts—arrangement sheets
3. Conservation in Notation	Conserve doctor's time—shift to clerical and eliminate non-essential	Desirable—not at sacrifice of completeness Conservation a matter of cost
4. Condensation of record	Desirable	Desirable
5. Ready yield of information	Desirable for essential information only	Essential for all facts major and minor
6. Accuracy	Desirable	Desirable
7. Legibility	Essential	Essential
8. Expansibility and adaptability	Essential	Desirable—difficult to achieve
9. Completeness of notation	Summary note of important facts is sufficient	Essential for every item to be tabulated

III. After the problems of gathering the data have been met, it is essential to arrange for the tabulation and cross-indexing of certain facts. This function is usually considered to be the task of the record librarian. At the present time an experiment is being undertaken with regard to evaluating the possibilities of establishing a central statistical service unit which will permit the use of modern tabulating machinery for this very difficult hospital medical tabulating problem.

The ultimate goal of the program would be fourfold: (1) to promote a better cross-indexing of records for all participating hospitals at little, if any, additional costs over their present record expenditures; (2) to make possible economical tabulation for research, administrative, or professional purposes; (3) to create generalized inter-hospital statistics with respect to administrative, cost, purchasing and morbidity statistics; (4) to perpetuate a centralized group which would carry on the work of standardization between hospitals.

DISCUSSION

DR. J. S. GILFILLAN (St. Paul): I wonder if the members appreciate how important this subject is. I was glad to hear Dr. Dunn's differentiation between the clinical history and the data sheets. Most of us are not particularly interested in the data sheet, and most of our clinical histories are adapted to our immediate need. In regard to the different histories men take, a half a dozen men might take a history for the same disease and each one be a good history for the man who took it. For instance, if Dr. Schwyzer and I were each to take a history of a gallbladder case, I imagine they would be quite different and yet each one be good for the man who took it. My histories would be of no value to Dr. Dunn but they are pretty good for me—at least they are the best I can do for myself.

There is a great difference in this that we must appreciate, i.e., the value of the clinical history to the doctor who is taking it and also for the general records. The clinical histories might not be worth much for general records. It will be difficult to standardize these records. Perhaps it might be done for only certain diseases at first, so that they may be valuable to

done in epilepsy, asking the patients not only what they have but what they haven't. If a doctor asks the patient only about what he thinks the patient ought to have if he has epilepsy, then the record would not be particularly valuable to Dr. Dunn.

A NEW FLASHLIGHT POINTER, operated with batteries, was demonstrated by DR. HORACE NEWHART, Minneapolis, and he asked Dr. Nordland to use it in connection with the lantern slides shown in his paper.

THE DIAGNOSIS AND TREATMENT OF MALIGNANT TUMORS OF THE THYROID GLAND

A paper with the above title, by Dr. Martin Nordland and Dr. Lawrence M. Larson, of Minneapolis, was presented by Dr. Nordland. This was illustrated with lantern slides.

ABSTRACT

Malignant tumors of the thyroid are not extremely rare, when one considers numerous statistical studies showing that from 1 to 3 per cent of all nodular growths in this gland are carcinomata. However, it is only rarely that this type of malignancy is diagnosed preoperatively since a small single area in a benign nodule is involved early in the disease, but, on the contrary, when there is a hard fixed tumor, hoarseness, dyspnea, and immovable vocal cords, the nature of the condition is obvious. By this time metastases are likely to be extensive; in fact, they often occur so early in the disease that their origin may be obscure. It also has been shown that the outlook is not entirely hopeless when once the diagnosis of malignancy of the thyroid gland has been made. By the combination of surgery and radiation in the treatment of these lesions, 5-year cures have been obtained in as many as 43 per cent of cases (Pemberton).

CARCINOMA

Of thyroid neoplasms Pemberton found malignant adenomata to comprise 39 per cent, papillary adenocarcinomata 31 per cent, and the remaining 30 per cent to be largely made up of diffuse growths of the scir-

rhous type including a few of the spindle cell variety. The microscopic diagnosis of malignancy in the thyroid is not always easy even for a trained pathologist, since there is a great diversity of histologic features as well as a marked similarity to benign conditions. However, actual invasion by the neoplastic cells of blood vessels, if found, is a reliable criterion upon which to base a diagnosis of malignancy. If such invasion is not present, reliance must be placed on histologic changes in cellular structure.

It is not surprising to note that metastasis takes place early in this disease when one considers the rich blood supply to the gland, and its proximity to the lymphatics and large blood vessels. The incidence and extent of metastasis, however, varies greatly with the type of lesion and the degree of malignancy, it being noteworthy that the papillary type of growth frequently shows late metastasis and then only to the regional nodes. Highly malignant lesions, such as the spindle cell variety, are of rapid growth, produce early distant metastasis and usually prove to be speedily fatal. Therefore in the treatment of this condition, both the factors of extent of the growth and the histologic structure of the lesion must be kept in mind.

The symptoms of this disease are not always characteristic. These patients are usually in the fifth and sixth decades of life and in 90 per cent of cases there is a history of a preëxisting nodule or unilateral enlargement of the thyroid gland. A nodule such as this may suddenly enlarge, it usually becomes harder, more nodular and soon symptoms of tracheal compression or laryngeal involvement are present. Mediastinal or pulmonary extension may produce dyspnea but pain is frequently a late phenomenon. Pressure on the recurrent laryngeal nerve or direct extension of the growth into the trachea results in hoarseness and cough, and if the esophagus is encroached upon, dysphagia is present. Hoarseness is a significant symptom, since it usually means that the tumor has broken through the capsule and that the nerve is actually invaded and pressed upon. In non-malignant neck tumors, involvement of the recurrent laryngeal nerve is very rare. The question of the possibility of carcinomatous lesions of the thyroid producing hyperthyroidism has not been completely settled although Pemberton states that this condition practically never takes place. When there is enlargement of the gland along with a condition of hyperthyroidism, the presence of malignancy is very rare, although in Pemberton's series, 87 per cent of the cases of malignancy were associated with benign nodules elsewhere in the gland. It is these benign adenomata which are most likely the cause of the hyperthyroidism.

In many instances operations are undertaken for a supposedly benign adenomatous goiter only to find, by immediate microscopic examination or by recurrence of the lesion at a later date that neoplastic change had already taken place. Needless to say, it is in these cases that are not diagnosed clinically that the best results may be expected. This fact, however, is dependent upon the pathologist making a thorough search and reporting the presence of malignancy at the time of operation. Extension of the growth through the thyroid capsule, as evidenced by fixation of the gland, lymph node involvement or metastasis, usually precludes the possibility of cure or resection of the mass. When metastasis occurs, the incidence is in the following order: chest, bones (pelvis, clavicle, sternum, ribs, skull, knee, spine), and abdomen.

In the prophylactic removal of adenomata of the thyroid gland lies the greatest hope of cure of malignant lesions, since about 90 per cent of all these neoplasms occur in preëxisting nodules. After malignancy has been diagnosed, the treatment of choice is radical resection, and, if this is impossible, irradiation alone or combined with surgical removal is strongly indicated.

In early cases in which the carcinoma is confined within the capsule, removal of all of the growth without rupture of the capsule is sufficient. If there is no definite encapsulation, total removal of the affected lobe must be done. In still later cases, even though the growth is fixed, complete extirpation with subsequent irradiation should be done. At exploration, if the growth is found to be inoperable, radium needles may be buried in the tumor. These are attached to silk threads so that the surgical wound may be closed and the needles removed aseptically after the specified time has elapsed. In addition, a large rubber drainage tube should be left in the wound so that radium on a lead stem may be inserted into the depths during convalescence. In inoperable cases supplementary treatment is usually necessary, consisting of checkerboarding the region of the thyroid gland and applying radium in a mild erythema dose. High voltage roentgen ray treatment may also be used as a supplementary measure. By this method of treatment Pemberton and Fricke have effected a goodly percentage of cures.

In summary, it may be stated that surgery alone in this condition is usually not justifiable even if the malignant lesion is entirely removed, although in many instances radical resection has proved to be a satisfactory procedure. The latter is especially true of the papillary adenocarcinomata, which grow slowly and tend to remain encapsulated for a long time. In the more malignant types, radiotherapy certainly offers additional protection against the extension of the disease. Tracheotomy is frequently necessary, especially in the late stages of the disease, as a palliative measure.

The prognosis of carcinoma of the thyroid has been shown by Pemberton and Fricke and others to be as good as that of similar lesions of any other organ with the exception of the lip and the skin. Of 323 cases treated by them with a combination of surgery and irradiation, 5-year cures were effected in 43.9 per cent. Twenty per cent of these individuals lived ten years.

SARCOMA

Almost every conceivable type of sarcoma of the thyroid has been described, including the fibro-, chondro-, osteo-, lympho-, hemangio-sarcomata, and also the round, spindle and mixed cell variety. Metastatic sarcoma involving the thyroid gland has occurred but it is very rare.

Grossly, thyroid sarcomata are usually unilateral or median tumors; rarely do they produce a diffuse involvement of the gland. The rapidity of growth of these lesions is extremely variable depending upon their degree of malignancy. The more differentiated types, such as the fibrosarcomata, are of slow growth, while the more embryonic types, especially the round cell variety, enlarge rapidly, metastasize early and widely and death commonly takes place relatively soon after the onset of symptoms. Hemorrhages and necrosis are common in the latter type of case, and in some cases of this nature enlargement has been so rapid that the condition has simulated a phlegmon of the neck.

As the malignant tumor grows it invades adjacent tissues, the veins of the neck, the trachea, larynx, muscles, arteries, nerves and skin. The original contour of the gland soon becomes completely destroyed from extension of the growth. Symptoms of compression of the esophagus, of the trachea, and especially of the recurrent laryngeal nerve, early giving rise to hoarseness, are common. Death commonly occurs from respiratory difficulty due to edema and compression of the glottis.

Metastasis may be late, but usually it is early. The route by which it occurs is primarily through the blood stream, less frequently by way of the lymphatics; invasion of the thyroid veins within the goiter itself has been described along with the release of emboli directly into these veins, metastatic growths reaching primarily

the lungs, and secondarily the skeletal system, liver, kidneys and intestines. Frequently it is the case that metastasis dominates the picture while the primary focus remains relatively latent. Pulmonary metastasis often leads to erosion and perforation of blood vessels resulting in hemorrhages, pleural effusions, and so forth. These conditions may be confused with tuberculosis.

Sarcoma of the thyroid may occur in young individuals the same as it does in other locations of the body. According to most investigators sarcoma, and likewise, carcinoma, arises in about 90 per cent of cases in a preëxisting nodular goiter, usually in an individual in the fifth and sixth decades. As long as the growth remains inside the capsule, no symptoms are produced, so the exact time at which the malignancy begins cannot be determined. Pre-malignant conditions likewise are difficult in evaluation since they may exist for a long period and the exact time of their metamorphosis into malignant lesions cannot be determined. The goitrous enlargement is the only symptom of which the patient is aware.

DIFFERENTIAL DIAGNOSIS

In the differential diagnosis there are several conditions to be considered. The most noteworthy, although rare, is the so-called Riedel's struma, or woody thyroiditis. The etiology of this disease has been variously ascribed to tuberculosis, lues, and other types of chronic inflammation, but no convincing evidence of any of these factors has been presented. In this disease the gland is so hard that its consistence has been described as stony or like that of iron. However, its contour is smooth and rounded, the normal shape of the gland is retained, there is no hoarseness and there is little or no fixation of the gland to surrounding structures. There is no evidence of extension to regional nodes and distant organs. Malignant tumors are usually nodular and unilateral, they frequently metastasize early and soon involve the recurrent laryngeal nerves so that hoarseness and dyspnea are relatively common symptoms. The indications for surgical removal of the gland affected by woody thyroiditis consist mainly in pressure symptoms such as dyspnea and dysphagia. When surgery is undertaken for this disease, it should if possible be limited to partial resection of the gland, since as a rule very little functioning gland tissue is left and myxedema may result. Late in the disease myxedema is common but this may be controlled satisfactorily by the oral administration of thyroid gland extract.

Tuberculosis of the thyroid, while extremely rare and of little clinical importance, is occasionally confused with malignancy. It has been noted that tuberculosis occurs frequently in association with increased functional activity of the gland in distinction to malignancy which rarely invades a gland already involved with hyperthyroidism. The disease is most frequently a part of a generalized tuberculosis or secondary to an acid fast infection elsewhere in the body; the result may either be a frank abscess formation or a chronically inflamed fibrotic mass. Microscopically the latter type shows tubercles intra- or interfollicularly. The surgical treatment is incision of the abscess or lobectomy, depending upon the condition encountered. The prognosis is excellent, according to Rankin and Graham. From their studies, they could not conclusively determine whether the hypertrophic gland is rendered more susceptible to invasion by the bacillus of tuberculosis, or whether the infection stimulates the parenchyma to abnormal activity resulting in hyperthyroidism.

In the author's series of a total of eleven cases of malignancy of the thyroid (ten carcinomata, one sarcoma), there have been four apparently cured individuals who have lived respectively twenty months, three years, four and one-half years, and eight years. One

of these patients has almost a complete myxedema which necessitates daily doses of thyroid extract, but the other three individuals are normal in this respect. Deaths in the other seven cases took place up to the nineteen months postoperatively except that of the individual with sarcoma, who has extensive metastases four months after thyroidectomy.

DISCUSSION

DR. ARNOLD SCHWYZER (St. Paul): I want to congratulate the doctor on the number of interesting cases he had and on the fine sections he showed us tonight. In the treatment of carcinoma of the thyroid we should not rely on surgery alone, as carcinoma of the thyroid is mostly very radio-sensitive. I recall a case which was an extreme one. The patient had a goiter that came down 7 cm. below the clavicle on the outer surface of the chest wall. The elderly lady was in great misery and apparently it was a hopeless case. Nevertheless, we thought she would be better off if we operated, and we removed most of the mass and then inserted radium into the remaining part of the gland. She lived about two years, and for quite a while her neck looked surprisingly good. I follow this course in every case. They usually respond well. I think it is a good thing to apply x-ray treatment also.

The doctor mentioned the penetration of the blood vessels by the growth. I have seen that several times macroscopically at the operation. Microscopically it can be seen not infrequently. At times you may have only a suspicion before operation. The diagnosis usually comes to you if a goiter has existed for many years and then the patient has a little pain, with a rapid increase of the goiter, often an increase in the consistency. Later on the mobility is reduced, etc.

There is one condition of the thyroid that is easily mixed up with these cases, and that is a subacute thyroiditis, or rather strumitis. The patient may have some fever. I remember Kocher once wrote: How long will it take until our Swiss physicians will remember that point, that a slight fever with recent swelling in the thyroid does not always mean thyroiditis, but may mean carcinoma?

The fact that these growths often select to metastasize in the skull or manubrium sterni or ribs is well known. I remember a case my brother once had where the man came in with a large tumor mass on his head and an enlarged left lobe of the thyroid. He at once took the enormous skull tumor to be a metastasis of the thyroid, and so it was. Some of these metastases are of the appearance of colloid containing thyroid tissue, apparently normal gland tissue, and in the thyroid itself you can detect perhaps only some harmless looking adenoma.

I remember one case of von Eiselsberg, where he removed the whole thyroid. At that time we did not know anything about parathyroids. Myxedema followed, which cleared up when a tumor developed later in the manubrium sterni. When this had to be removed on account of dyspnea, the trouble reappeared. Thus these metastases can at times have some physiological function.

The doctor spoke of Riedel's struma. About three weeks ago we had a case in which the thyroid was exceedingly hard and fixed to the side of the trachea. There was nothing malignant in it. In some portions the glandular tissue seemed choked off entirely by fibrous material.

As I remember now, I have seen only one case of tuberculosis. They are very rare. That was in a woman patient whom I saw again this year for another condition. I operated upon her about eight or nine years ago. She also had some toxic symptoms with it. Our sections gave, however, not nearly as pretty a picture as those I have seen tonight. Tuberculosis of the thyroid is not always giving such an unmistak-

able picture under the microscope, and it may require several sections to come to a positive opinion.

DR. H. A. H. BOUMAN (Minneapolis): I was much impressed with Dr. Nordland's paper. It was because Dr. Arnold Schwyzer stimulated and aided me that I came to make the survey I did some years ago.

The metastatic colloid goiter cannot be distinguished from the ordinary goiter. I was in consultation in one case in which the doctor had operated behind the mastoid and he called it an aberrant goiter. Another patient I saw during August, 1926, in consultation, was a woman 63 or 64 years old who was sitting in bed at the hospital fighting for breath yet serenely undisturbed. She had big lips, thick skin, and was myxedematous. She had come in that day because her difficulty of breathing had come on more or less suddenly. I asked her doctor to aspirate the tumor protruding from her neck and soon after that she was relieved. He operated during the following September and removed a long sack from down below the sternum, which contained about three-fourths of a pint of blood clot. There was no more thyroid found. In sequence, the doctor gave this patient thyroid until about March, 1927, at which time he had to stop the extract as the woman had grown exceedingly nervous. I saw her again with him at the hospital in September, 1928, because of a return of the difficult breathing. She then presented a case of hyperthyroidism with an enormous broad neck which was coarsely nodular as seen from the front. Breathing was labored. Biopsy showed carcinoma. She died in December, 1928. This was degenerated goiter, myxedema, adenocarcinoma causing hyperthyroidism.

Kocher used to say that there were two signs to be especially considered as early signs: (1) an unaccounted for, more or less rapid, growth, in a previously quiescent goiter; (2) a change in the consistency of the struma—growing harder. At that time people did not believe there were so many malignancies. He had 400 in about 4,500 cases.

The classification of Kocher and Langhans was as follows: Struma proliferans; ordinary carcinoma; metastatic colloid goiter; parastruma; post-bronchial goiter of getzowa; papilloma and canceroid.

The proliferating goiter was much like Halsted's hyperplasia—an increased blood supply and vessels, change and growth of the epithelium, reciprocal alteration in size and contour of the follicles, and vanishing colloid; only the malignant nodule had a stellate scar in the center. I thank you.

DR. GUSTAV SCHWYZER (Minneapolis): I would like to ask Dr. Nordland whether anything new in the line of treating metastases of cancerous goiter has come out at the last goiter conference which he attended. I recall from Kocher's Clinic that the Russians, after excision of the primary thyroid carcinoma, advocated

that large doses of arsenic be given internally in order to check the metastases.

I remember one case in a middle-aged woman with a movable one-sided goiter the size of a goose egg, a goiter that did not pain her at all. She claimed she did not know of any increase in the size of the goiter during the last year before she came to us. At the same time she had a very soft manubrium sterni which could be pressed in without any pain and which rebounded into its place. Kocher at that time made a diagnosis of cancer in the goiter and removed the same. The goiter specimen showed in its middle a sarcomatous growth the size of a hazelnut.

The case my brother mentioned that I had years ago was in a man who showed a tremendously enlarged skull. Palpation of the bone caused a crackling sensation as if the top of the skull were composed of bone platelets. Dr. Clarke Stewart at the time asked me for my permission to show the case to his class at the University and I remember he presented the case as an osteosarcoma of the skull. I did not agree with his diagnosis and excised a small, one-sided goiter the size of a hen's egg. The patient never knew he had a goiter and therefore was unable to make any statement as to growth of the goiter. The cancerous degeneration was very evident under the microscope.

DR. NORDLAND (in closing): I want to thank the gentlemen for their discussions. While showing the slides, I neglected to discuss the treatment which is brought out in my paper and which agrees with Dr. Arnold Schwyzer's discussion. Radium plus resection of the lesion is the most effective weapon we have in the treatment of carcinoma of the thyroid. I think the combination of surgical removal and radium should be used. The suspected carcinoma of the thyroid should at least be explored just the same as carcinoma elsewhere and if the condition is found to be too serious a problem for surgical removal, radium can be applied within the wound or the wound may be closed and radium applied on the surface.

The treatment of the metastases referred to in Dr. Gustav Schwyzer's question is not settled. I am not familiar with any treatment with drugs and do not know of any better remedy than deep x-ray or radium therapy. In the treatment of malignancy of the thyroid, the best results will be obtained by early diagnosis and early radical resection. Adequate surgery alone will cure many adenocarcinomata of the papillary type which have not penetrated the capsule. Wide resection plus radium offers the best results in the majority of cases, while radium alone will often give surprisingly good results in those cases considered too extensive for surgical interference. Palliative tracheotomy will occasionally be necessary in some of the far advanced cases.

R. T. LAVAKE, M.D., Secretary.

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(April Examination)

NAME	SCHOOL OF GRADUATION	ADDRESS
Addy, Edward Rezin.....	U. of Minn., M.B. 1931.....	517 E. 2nd St., Duluth, Minn.
Anderson, Nels Henry.....	U. of Minn., M.B. 1932; M.D. 1933.....	Bethesda Hospital, St. Paul, Minn.
Appell, Adolph Asher.....	U. of Toronto, M.D. 1929.....	Mayo Clinic, Rochester, Minn.
Burch, Hobart Alexander.....	Harvard Univ., M.D. 1929.....	504 4th St. S. W., Rochester, Minn.
Cain, Clark Leon.....	U. of Minn., M.B. 1932.....	Ancker Hospital, St. Paul, Minn.
Coate, Joseph Dalton.....	Indiana U., M.D. 1930.....	Mayo Clinic, Rochester, Minn.
Cragg, Richard Williams.....	U. of Cincinnati, M.B. 1930; M.D. 1931.....	Mayo Clinic, Rochester, Minn.
Davis, David Bennett.....	U. of Minn., M.B. 1933.....	Ancker Hospital, St. Paul, Minn.
Davis, Perk Lee.....	Temple Univ., M.D. 1928.....	Mayo Clinic, Rochester, Minn.
Deacon, Alfred Ernest.....	U. of Manitoba, M.D. 1929.....	Mayo Clinic, Rochester, Minn.

Greenfield, William Theo.....	U. of Minn., M.B. 1932.....	Fairview Hospital, Minneapolis, Minn.
Hankerson, Robert Geo.....	U. of Nebr., M.D. 1932.....	Hill City, Minn.
Heilman, Fordyce Russell.....	Northwestern U., M.B. 1930; M.D. 1931.....	Mayo Clinic, Rochester, Minn.
Holmen, Robert Winston.....	U. of Minn., M.B. 1932; M.D. 1933.....	University Hospital, Minneapolis, Minn.
Hynes, John Eldon, Jr.....	U. of Minn., M.B. 1931; M.D., 1932.....	500 Delaware St. S. E., Minneapolis, Minn.
Johnson, Karl Frederick.....	U. of Minn., M.B. 1931; M.D. 1932.....	1259 Edgerton St., St. Paul, Minn.
Loomis, George Lyman.....	U. of Minn., M.B. 1932.....	Miller Hospital, St. Paul, Minn.
Mack, Joseph John.....	U. of Minn., M.B. 1932.....	Ancker Hospital, St. Paul, Minn.
MacKinnon, Donald Charles.....	U. of Minn., M.B. and M.D. 1932.....	Mpls. Gen. Hospital, Minneapolis, Minn.
McKenzie, Charles Hugh.....	U. of Alberta, M.D., 1927.....	916 E. 15th St., Minneapolis, Minn.
Olson, Grant Edmund.....	U. of Minn., M.B., 1932.....	Ancker Hospital, St. Paul, Minn.
Parker, David Marcellus.....	U. of Minn., M.B. 1932.....	St. Mary's Hosp., Minneapolis, Minn.
Peterson, John Hartley.....	U. of Minn., M.B. 1932.....	Miller Hospital, St. Paul, Minn.
Petri, Karin Aileen.....	U. of Minn., M.B. 1932.....	University Hosp., Minneapolis, Minn.
Porter, George LeRoy.....	U. of Nebr., M.D. 1931.....	Mayo Clinic, Rochester, Minn.
Prins, Leo R.....	U. of Minn., M.B. 1932.....	St. Joseph's Hosp., St. Paul, Minn.
Sather, Russell Olav.....	U. of Minn., M.B. 1932.....	Mpls. Gen. Hosp., Minneapolis, Minn.
Siegmann, William Chauncey.....	U. of Minn., M.B. 1932.....	Swedish Hospital, Minneapolis, Minn.
Slavens, John Jacob.....	U. of Toronto, M.D. 1930.....	Dept. of Path., U. of Minn., Mpls., Minn.
Sorensen, Elmer Mork.....	U. of Minn., M.B. 1932.....	Ancker Hospital, St. Paul, Minn.
Watson, Sidney William.....	U. of Minn., M.B. 1932.....	Gillette Hospital, St. Paul, Minn.
Windsor, Robert Lloyd.....	Columbia U., M.D. 1932.....	Ancker Hospital, St. Paul, Minn.

BY RECIPROCITY

Ochsner, Clarence George.....	Washington U., M.D. 1931.....	411 Garfield Ave., Chicago, Ill.
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Cole, John Gordon.....	U. of Minn., M.B. 1931; M.D. 1932.....	Redwood Falls, Minn.
Priest, Robert Edward.....	U. of Minn., M.B. 1931; M.D. 1932.....	1226 E. 4th St., Duluth, Minn.
Waugh, John McMaster.....	Rush Med. Col., M.D., 1932.....	Mayo Clinic, Rochester, Minn.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

PROCEEDINGS OF THE 27TH ANNUAL CONVENTION OF THE ASSOCIATION OF LIFE INSURANCE PRESIDENTS. Held December 7 and 8, 1933. 259 pages.

THE PREGNANT WOMAN. Porter Brown, M.D. 174 pages. Price, cloth, \$2.00. New York: Eugenics Publishing Company, 1933.

TREATMENT OF THE COMMONER DISEASES. Lewellys F. Barker, M.D., Professor Emeritus of Medicine, Johns Hopkins University. 319 pages. Price, cloth, \$3.00. Philadelphia: J. B. Lippincott Company, 1934.

MENTAL HYGIENE IN THE COMMUNITY. Clara Bassett. Consultant in Psychiatric Social Work, Division on Community Clinics, The National Committee for Mental Hygiene, Inc. 394 pages. Price, cloth, \$3.50. New York: The Macmillan Company, 1934.

THE JOY OF LIVING. Dr. Franklin H. Martin. Garden City, N. Y.: Doubleday, Doran and Co., 1933.

The lives of comparatively few medical men merit autobiographies. Still fewer of these who have had interesting existences would be able to record happenings in an interesting way. Dr. Martin has had an interesting life and in his autobiography he relates his experiences in a charming manner.

The first volume reads like a novel and, beginning

with his parentage and childhood, records the struggle of a Wisconsin youth to obtain a medical education. The story of the founding of *Surgery, Gynecology and Obstetrics* and the American College of Surgeons is of special interest.

The second volume tells of Dr. Martin's personal experiences in Europe and the United States during the World War. The activities of the Advisory Commission of which he was a member and the Council of National Defense established by President Wilson some seven months before our participation in the World War are given in detail, and the recital gives a new slant on the part played by our government in the conflict.

TEXTBOOK OF PHYSICAL THERAPY. H. F. Wolf, M.D., et al. 409 pages. Illus. Price, \$5.50. New York: D. Appleton-Century Co., 1933.

Historically the application of physical agencies to the alleviation of pain, the improvement of function and the relief or cure of disease dates back to the beginnings of medicine and we find abundant proof of this in the earliest extant writings. Tracing its progress through the years we find that whatever merit it has possessed has been greatly hindered and handicapped by two powerful forces. It has been greatly over-exploited by its enthusiastic advocates and it has been utilized as the basis of many of the most flagrant examples of quackery in history. Obviously it has, for the moment, lent itself admirably to any method of cure wherein a powerful mental impression required the assistance of something tangible and yet at the same time deeply mysterious. The "King's Touch" was a good example in which deep-rooted belief amplified by superstition and emphasized by physical contact brought about at least mental relief, a simple illustration, it is true, but no different in its fundamentals from the more elaborate rituals and complicated machinery of later developments. As stated, this misuse of physical therapy has been its greatest handicap,

for thinking people have been reluctant to use and recognize its benefits under such circumstances.

On the other hand, a study of its development from the very beginning impresses one with the feeling that always has there been a studied effort to use physical therapy honestly and conscientiously, by those who recognized its limitations as well as its values and were willing to utilize it in its legitimate sphere without exaggerating its possibilities. It is into this picture that the present volume fits very nicely. The author has spent twenty serious years in its preparation and has produced a volume that must appeal to the judgment of those who are conservatively minded in their attitude toward this type of therapy. The first section, containing 114 pages, is devoted to consideration of the theory and principles; the last part, consisting of about 235 pages, covers a wide range of practical application of physical therapeutic measures. No attempt is made to include any treatment by x-rays or radium.

To those who are willing to accord its proper values as an adjuvant and not a cure-all, that diagnosis and a good knowledge of pathology are fundamentally necessary, the use of physical therapy offers a wide scope of helpfulness and this book can be cordially recommended as a safe and yet highly informative guide.

GILBERT COTTAM.

THE TECHNIC OF LOCAL ANESTHESIA.

Arthur E. Hertzler, M.D. 5th ed. 292 pp. Illus. \$5.00. St. Louis, Mosby, 1933.

I read the fifth edition of Hertzler's "Local Anesthesia" with interest, pleasure and profit. The thinner paper makes a neater book and a smaller one, although about ten pages have been added. The conservative attitude of the book, giving limitations and indications for the use of local anesthesia, and the new chapters on spinal and intravenous anesthesia help to round out the volume and bring it up to date. This helps to make it especially valuable to the beginner.

To an enthusiastic user of local anesthesia the book

is refreshing in the personal slant given to many of the paragraphs. There is too much tendency to be pedantic and repetitious in most books, and this is notably lacking in this volume. I can recommend it highly to the beginner as well as to the more experienced surgeon.

O. I. SOHLBERG, M.D.

A NEW APPROACH TO DIETETIC THERAPY

Eugene Foldes, M.D. 434 pages. Illus. Boston; R. G. Dadger, 1933.

In this monograph, Dr. Foldes has elaborated the thesis that certain diseases are caused by disturbances in the distribution and movement of water and minerals, mainly retention of water. He devotes several chapters to general considerations of diet, gastro-intestinal tract, internal secretions, circulations, respiration, acid-base balance and kidneys. Most of the book is spent in explaining various diseases including epilepsy, eclampsia, migraine, angina pectoris, asthma and allergic diseases, gout, essential hypertension, blood diseases, including pernicious anemia, acne vulgaris and constitutional disposition and aging. The last part of the book gives directions as to diet and drugs in the treatment of these diseases, mainly aiming to avoid retention of water and minerals.

The book as a whole is an indication of the increasing interest in water and mineral metabolism which has rather been neglected until late years. It is a little difficult to read and there are ideas expressed which seem in conflict with a number of commonly accepted facts, particularly in regard to the cause and treatment of pernicious anemia and peptic ulcers.

In short, this is a monograph of interest to those especially interested in diets as such and who want to know all theories of disease and of therapy. However, it is not to be recommended to those who have not already a fairly wide knowledge of medicine and therapy.

H. B. SWEETSER, JR.

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